



FRIDAY, OCTOBER 21.

Working Single-Track Roads in England—The Train-Staff System.

We reprint below from the September number of the *London Railway Engineer* the larger part of an article on "Railway Signaling," having especial reference to the methods employed in working roads or sections of roads which have a single track only:

Hitherto we have, as before stated, chiefly considered the elements and functions of out-door signaling as working in accordance with the common arrangement of the block system, for governing separate up and down roads. We shall now refer to a peculiar modification of the above system in combination with or without other subsidiary devices for securing the safety of traffic on single-line railways, which obviously necessitate trains traveling to and fro in opposite directions upon the same metals. For this purpose the

same direction, besides placing inconvenient restriction upon a succession of similar traffic, which is often required in one direction in the morning, and the opposite in the evening.

To reduce the above impediments, a modification of this system was devised, now known as the train-staff and ticket system, by which more than one train may be, in due course, successively dispatched in either direction. Under this system any convenient number of tickets, of particular shape or color, may be issued successively to drivers, provided the staff of the section is at the station from whence they start, and the last train carries over the staff to the other end of the section, when, if necessary, the direction of the traffic may be reversed. As a check upon indiscriminate use of the staff, it is usually arranged that they shall serve as keys to the boxes in which they are to be kept, so that on their removal they automatically lock the boxes, which are only to be subsequently opened by the introduction of the staff.

As a practical illustration of the last mentioned system, suppose it is desired to send five up trains from A to B before one is required to be returned from B to A. Then the inspector or station-master at A issues four different tickets to the various up drivers, and dispatches them at proper intervals, but he will give the staff of the section to the fifth driver, who will then convey it to the other end of the section. On its arrival and delivery, B can send another train back with the staff or issue tickets for any number of trains previously, as already explained.

just on duty thereupon started the up train from Yarmouth, and immediately afterward discovered his deplorable and irremediable error, for the two trains were rapidly approaching each other in opposite directions on the single road, and there was no time nor means of preventing the frightful inevitable result. To make matters worse it was a dark night, and the trains met upon rounding a curve on the single way near Thorpe, so the drivers had little chance of seeing the danger before it was too late to apply the brakes. The company immediately afterward wisely adopted the combined block and staff system, and went to further expense of doubling a portion of the line.

There yet remains another modified method for securely conducting traffic over single line railways, and to which we may briefly direct attention, viz., that known as the Porter or Pilot system. It is not unfrequently resorted to in cases of temporary disablement of the other before mentioned systems, or during repairs of a double road, when it is rendered necessary to temporarily utilize a small portion of one road for both up and down traffic, but otherwise as a permanent system it is very little used. According to this method of working, no engine or train is permitted to enter a section unless in charge of a particular porter, pilot, or guard, provided for that special section. Each pilot is distinguished and recognizable by wearing a particular colored cap and a badge on his arm with the number of the section to which he belongs inscribed thereon.

The pilots occupy a place on the engine, and without them

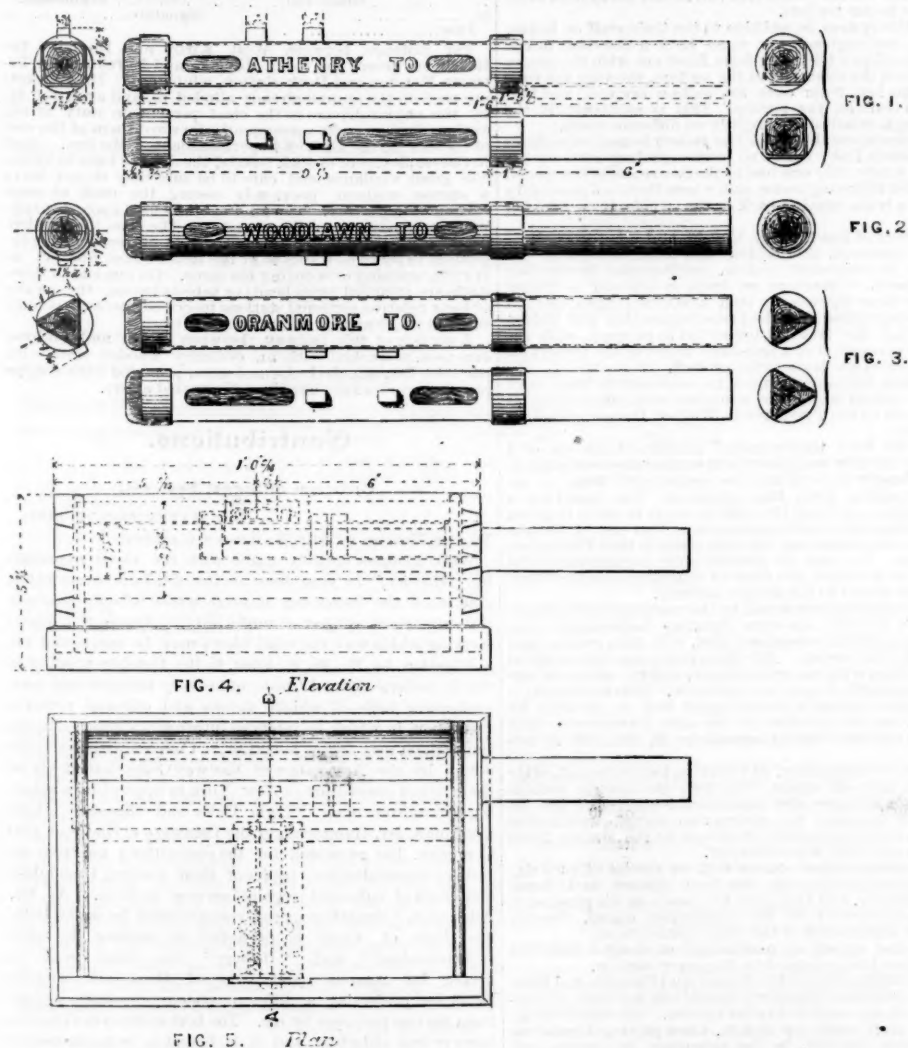


FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4. Elevation

FIG. 5. Plan

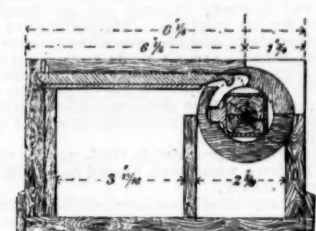


FIG. 6. Transverse Section Thru' A. B.

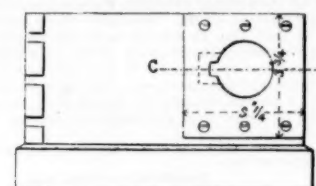


FIG. 7. End Elevation.

Section Thru' C. D.

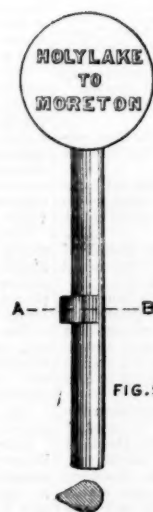


FIG. 9

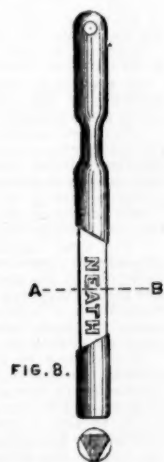


FIG. 8.

TRAIN-STAFFS AND BOXES.

line is generally divided into definite sections, and the traffic securely conducted over the same by the so-called staff or ticket system, which consists in providing a particular staff, truncheon or ticket, or their equivalent for each section, and which is always carried by the trains traveling over each portion of the line.

The staffs or tickets provided for the different sections are usually dissimilarly shaped or colored, and a letter or name is annexed thereto, so as to indicate the section to which each belongs, and thus render them distinct and readily recognizable. No engine driver is permitted to proceed with a locomotive or train, unless he has first in his possession the staff (or its equivalent) of the particular section or single line over which he is about to travel, and as there is only one such staff provided for each section, it cannot under these conditions be on two or more engines at the same time, so that the traffic is thus safely conducted and collisions rendered impossible, providing the system is rigidly adhered to.

For example, assuming a train to be ready to leave a station A, via section B, on a single line of way, the driver of such train would receive the particular staff for such purpose, and upon arriving at B he would relinquish the same for another similar staff to pass his train over the succeeding section C, and so on throughout the whole length of line.

At the stations or terminations of the various sections, passing places or turn-outs (forming double roads) are provided, so that trains approaching in opposite directions may remain therein until they receive their respective staffs to proceed, and thus securely pass each other. Of course, as soon as an up train has arrived, for example, at B, and given up the staff of that section, it may be handed over to another waiting train which may be then similarly dispatched in the opposite direction, or down from B to A, and so on throughout the system.

It is obvious, however, that such an arrangement for controlling traffic necessitates frequent and sometimes lengthy delays, as the respective staffs have to be continually returned before another train can be started in the

The safety of this combined system is not as great as the simple staff system first described—the issue of tickets giving more opportunity for mistakes and breach of regulations, but nevertheless it is a valuable adjunct when carefully carried out.

In any form of these systems, two coupled engines are considered as one train, and are allowed thus connected to be on the same section at one time.

The staffs or tickets may be of any convenient color or configuration, so long as their distinction is clear, as for example for section A,—B, staff red, and tickets square; section B,—C, staff blue, and tickets round, etc. And the officials in charge of the stations are the proper and only persons that should be entitled to give, receive or exhibit the staffs or tickets. In case of a train breaking down on a section the fireman is instructed to immediately proceed with the staff to the nearest station to obtain assistance.

The traffic over some single line railways is worked by a combination of the above system with the ordinary electrical block signaling instruments, and in some few cases such traffic is conducted on the latter principle alone.

The combined telegraph and staff system is very secure and always advisable where possible or convenient, but either system, when used separately, cannot be absolutely relied upon, as any inadvertent blunder may cause a frightful result.

For example, the Great Eastern Railway has about 460 miles of single line, and about 120 miles are worked by the block signaling and other telegraphs, in addition to the staff system, with most satisfactory results, although the system is rather expensive.

As an example of the dangers attending these systems when used separately we may recall to memory that dreadful catastrophe which occurred between Thorpe and Yarmouth, on the South Eastern Railway in 1874, in which 25 persons were killed on the spot, and over 75 seriously injured. It was, as will be remembered, occasioned by forgetfulness of the station master, and confused ideas of the day and night inspectors. The day inspector stated that he had not yet started the down mail from Norwich, so the night inspector

the drivers may not under any circumstances proceed on their journey.

The North British Railway has about six miles working on this system at Midddle Weighs, Woodley Lye, Armadale Sheepfold, Blairadam and Townhill Junction, etc., all of which are chiefly for mineral traffic.

About the greatest lengths of single line railways worked in Great Britain and Ireland are as follows:

Great Western Railway, Fitzwarren Junction to Barnstaple, 42½ miles; Great Eastern, Wymondham to Wells, 33 miles; Southwestern & Midland (joint), Bath to Wimbourn, 63 miles; North British, Riccarton Junction to Hexham Junction, 40 miles; Highland, Inverness to Dalross, 120 miles; Great Northern of Ireland, Dundalk to Enniskillen, 63 miles; Midland Great Western of Ireland, Roscommon to Westport Quay, 66 miles; Waterford to Limerick (extent of line) 55 miles.

[A table accompanying the article shows in Great Britain and Ireland 3,602 miles of single line worked on the combined staff and absolute block system; 435 miles worked on a combination of the train-staff system with telegraphic systems other than the absolute block; 338 miles worked on a system in which only one train is allowed at a time on a section of single line; 2,866 miles on the simple train-staff system, and 7 miles on the train-porter system. This total of 7,251 miles does not include about 2,000 miles of single line worked for freight or mineral traffic only.]

Through the courtesy of the management of the Midland Great Western Railway of Ireland we are enabled to lay before our readers some interesting details connected with their efficient system of controlling single line traffic.

This railway company has upward of 145 miles of double and 276 miles of single way, over 245 of the latter being worked on the train-staff system. More than 400 miles of this line is provided with electric telegraph communications. There are, in fact, telegraphic speaking instruments at 50 out of 84 stations, and out of the former, 36 are train-staff stations, and in this number only three are without electrical instruments for train signaling purposes.

It may here be observed that in Ireland upwards of three-

fourths of the railways have only single lines, i.e., one set of metals for both up and down traffic.

Three forms or descriptions of train-staffs are used on this railway, viz., round, square and triangular as to shape, and red, white and blue as to respective colors. The color of the train tickets issued and used on a section corresponds with the color of the staff of that section. In the distribution of the staffs the following order is observed: No. 1, round, red; No. 2, square, white; No. 3, triangular, blue, so as to provide at an intermediate station, staffs and tickets of two different colors for the two sections, controlled by such station, worked from there, thus materially assisting the station-master in giving the right staff or ticket for each section.

Fig. 1 represents a square train-staff as used on this railway between Woodlawn and Athenry; the body of the staff is formed of wood which is covered by a metallic casing, so as to obtain both strength and lightness. Fig. 2 shows a round staff as used between Ballinasloe and Woodlawn and fig. 3 one of triangular section employed from Athenry to Oranmore. All these staffs are similarly constructed and provided with projecting wards to serve as keys for their respective boxes, as illustrated by the drawing. There are 11 square white staffs, 15 round red and 11 triangular blue staffs in use on the different sections of this railway, all of which have the names of the stations to which they belong painted on them in large, plain type, as represented in the drawings.

Figs. 4, 5, 6 and 7 represent a side elevation, plan, transverse section and end view respectively of a train-staff box or receptacle as employed by this railway company. A staff is represented in the drawings as being inserted into a grooved aperture to serve as a key to such receptacle provided for its reception. The positions of the wards on the different staffs, and the respective grooves in the boxes into which they fit, are all made to vary, so that none but the proper relative staffs can open or interfere with the security of the boxes. This variance of position is shown by the plan, in which three different wards of a round, square and triangular staff are relatively shown by three distinct dot and dash lines.

The grooves provided in the boxes for receiving the staff-wards above mentioned, are all lined with brass to increase their durability.

There are 22 white-colored staff-boxes provided, capable of suiting the square staffs, and which are located at their proper respective stations, the names of which are painted on each box in plain letters. A box being necessarily provided at each end of a section, there are obviously just twice as many boxes as staffs. Similarly there are 30 boxes colored red to suit the 15 round staffs and 22 colored blue for the requirements of the custody of the 11 triangular ones.

A specimen or example of the kind of train-ticket used on the same railway is shown below, and which does not call for any special remarks or description, further than the explanatory rules and instructions printed thereon clearly afford.

MIDLAND GREAT WESTERN RAILWAY.

Train-Ticket No. — DRUMREE TO CLONSILLA.
To Engine Driver..... Engine No.
with the..... o'clock UP TRAIN.
You are authorized to proceed to Clonsilla Station, and the Train-Staff is to follow.

Station..... Date..... 188

* * This Train-Ticket is to be made out from Drumree to Clonsilla only. The Train-Staff corresponding with this Train-Ticket is to be seen by the Engine-Driver and Guard when the Ticket is handed to them at Drumree Station. The Ticket is to be handed by the Engine-Driver to the Guard, and by the Guard given up to the Station-Master immediately on arrival at Clonsilla Station.

This Ticket is to be stamped "canceled" by the Station-Master on its arrival at Clonsilla.

As previously mentioned the tickets for the various sections are of different colors, that of Drumree to Clonsilla given as an example being red.

After these tickets have been used, they are defaced by a canceling stamp, and are then sent to the head office to be duly recorded or entered in a book arranged or subdivided into suitable headings or classifications.

The following is a memorandum by the Irish Board of Trade Inspector, suggesting the amelioration of the usual system of conducting the traffic by staffs and tickets:

"The usual practice is, that the signal to start should be given by the guard to the engine-driver, after the guard has been told by the station-master that the work at the station has been completed, and the train may start; and, if this is carried out, it is better that the train-staff or ticket should pass through the hands of the guard, both in giving it to and receiving it from the engine-driver."

Now it may be mentioned that this has always been the practice on this railway in carrying out their train-staff rules—that is, to require the station-master to give the staff or ticket to the guard, and the guard to give it to the driver, so as to add to the safeguard of one person checking another by increasing the number of hands through which the key to the section passes. In fact, the Irish railways generally have adopted this system in theory, in all cases where it can be carried out. On this line, however, they have no non-stopping or express trains running through a staff station. And it may also be observed that any error or change in issuing or transmitting the staffs may always be remedied or set right by moving them by car or foot messenger, without regard to the loss of time that has been thereby incurred. Changes, however, in these staff arrangements may be effected when an engine is available to remove or convey the staff from one end of the section to the other, or to substitute a ticket for the staff—hence the importance of having speaking instruments provided at all crossing stations.

On arriving at the station to which the staff or ticket applies, it is immediately given up by the driver to the guard, and by the latter to the station-master, who thereupon at once exchanges it for the staff or ticket of the next section, and in the case of a ticket he accompanies the guard to the driver, and shows the train-staff to them both. There may be rare occasions when the guard is compelled, by having a large quantity of luggage, to get out in a short time, to defer the exchange, but it is made in all cases as soon as possible after arrival. This has been the practice on this line for years past, and Lieut.-General (then Col.) Hutchinson, confirmed its adoption by his remarks upon the Dalbeattie accident in August, 1874. Obviously, on a single line over which non-stopping or express trains run, this mode of working cannot be carried out, as for example between Stranraer and Girvan. Nor in the case of long goods trains can it be accomplished without considerable inconvenience.

The practical working of the system is conducted according to the new regulations and special instructions printed at the foot of the train-tickets as per illustrated example already referred to.

The Board of Trade inspectors for Ireland now also require in cases of all new openings of single line railways, additional precautions to be adopted, besides the ordinary train-staff regulations. The train-staff system is generally considered a sufficient protection against trains meeting from opposite directions, but it has been deemed advisable that some further precautionary measures should be devised and adopted, to prevent one train following another in the

same direction on a single road, until it has been definitely ascertained that the section of line is absolutely clear for its reception and passage.

The railway authorities of that country having to deal with no excessive pressure of traffic, few, if any, would have voluntarily provided additional safety means, especially for trains successively following each other on a single line of way, any more than on the double lines for successive up and down traffic.

However, the extra precaution being imposed or forced upon them, the question remaining to be solved was to devise the cheapest form of compliance, with the endeavor to avoid the cost of additional wires and special block signaling instruments.

It was, therefore, consequently suggested and approved that they should utilize the ordinary existing telegraphic-speaking instruments, and provide additional means of security by the introduction of printed checks termed line-clear tickets.

These extra tickets are issued so as to serve as checks upon every transfer of the staff of the section, by making the telegraph clerk who asks for line clear co-operate with the clerk who transmits such signal; further, by the ticket so filled up passing through the hands of the station-masters, guards, and drivers, a mutual and concurrent action is necessary for the system's safe working, while all of them are rendered conjointly responsible. The Board of Trade inspectors have thoroughly approved of this comparatively cheap system, as far as meeting the requirements of any ordinary traffic is concerned. The following two accompanying representations of the tickets themselves will render the system more intelligible to our readers.

[Under this system, in addition to the train-staff or ticket, the guard and engine-driver must have a line-clear ticket, which is in effect a telegraph form filled out with the proper answers from the other end of the section, showing the time at which the last train over the section arrived, and that there is no train on the section. This is substantially the form, though details differ slightly on different roads.]

In some instances this (line-clear ticket) is used on inclines on their double lines, where no block-signaling instruments exist, and where only one line of the two requires the special protection of following trains, and where there is a possibility of part of a train running back or the whole train sticking on a bank.

The sections of line between Enfield and Edinberry, Nobber and Kingscourt, and Kilfree and Ballaghaderreen, are worked on the train-staff system, supplemented by the electric telegraph. Therefore no train is allowed to follow another on these sections by staff and ticket rules, until it has been telegraphed that the preceding section and station is clear, when the train is permitted to proceed, with the additional precaution of a line-clear ticket of the prescribed form, as well as the train-staff or staff.

The electric train-signals used in combination with staff and ticket system are of the miniature semaphoric type, as now common to the Tyer, Preece, Walker, Harper, and other instruments.

During the time the train-staff remains at one end of a section, the electric semaphoric arm at the other end is maintained at danger to block the line against any train or engine approaching from that direction. The signal for a train or engine carrying the staff or ticket is not to be given from a station unless such semaphoric arm at that end of the section is lowered, indicating by such position that the section is then clear. As soon as possible after the arrival of the train-staff at a station, the electric semaphoric arm at the other end must be raised to the danger attitude.

The particular apparatus used by the company for the above purpose are Preece's one-wire signaling instruments, consisting of an electric semaphoric arm, bell, disk, switch, and plunger for each section. All these parts are in electrical communication with the said plunger, and by which all signals are transmitted upon its depression. It is practically a distant signal, worked from the signal box in advance by electricity, and the position of the arm corresponds with that of the out-door distant semaphoric at the box in advance.

Therefore the signalman, on receiving the train-staff, after giving the train-off signal, will turn his electric switch-handle to on and give five beats on the plunger of his instrument to transmit the obstruction signal, which thus places the electric semaphoric at danger at the station from which the train-staff was conveyed.

The signalman at that station will, on receipt of such signal, immediately place his out-door distant and home signals at danger, and then give five beats on his plunger in due acknowledgment of the obstruction signal, thereby placing the electric disk at the other station to on.

The out-door signals are maintained at danger until the train-staff has been returned to its proper station.

Between Ballysodare and Collooney, and Clonsilla and Dunboyne, absolute block signaling regulations are used, in combination with the staff and ticket system. All drivers have to exhibit their staffs or tickets, when passing Dunboyne and Collooney stations, to the signalmen in charge and operating the block-signaling instruments.

The following is an epitome of the regulations commonly observed in any form of train-staff or ticket working, and upon which the safety of the system depends, viz.:

1. Each and every train or engine must carry a staff or ticket before being allowed to proceed into or over a section of single line.

2. No train or engine must be permitted to leave a station unless the staff or section over which it is about to travel is at the station at the time.

3. At stations where trains have to cross each other's path all signals must be maintained at danger, except when lowered to admit a train.

4. The absolute custody of the staff and tickets should be confined to the official in charge of the station, and who for the time being should be the sole and only person authorized to receive, exhibit or deliver them.

5. When a train or engine is ready to start from a station, the staff or ticket should be given by the station-master to the guard, who shall transfer it to the driver, and the latter should then place it in a socket or box provided on the engine for such purpose.

6. If other trains or engines are required to follow successively in the same direction before the staff of the section can be returned, the ticket is given to indicate that the staff will follow, but no train must depart under any circumstances without having previously seen the staff at the station.

7. On arriving at the station to which the staff or ticket extends it must be immediately handed over to the station-master or person in charge.

8. Each staff bears the name or number of the section to which it belongs and applies; commonly it has a distinguishing form and color.

9. The staff-boxes and tickets, located at the various stations, are dissimilarly marked, colored or printed.

10. The tickets are kept in proper boxes provided for them, secured by an inside spring, and the key to open such box is the staff of the same section, so that access cannot be gained to the tickets unless the staff is at the station.

11. All spare tickets are kept under lock and key, and for their safe custody the person in charge is strictly responsible.

12. The staff, when at the station, is hung outside the box on a hook or bracket, and not kept within the same.

13. When trains are assisted by a second engine, the leading engine must carry the staff or ticket, but when the auxiliary engine is pushing behind, the leading engine should carry a ticket, and the assistant engine the staff.

14. In the event of a train or engine breaking down between stations, the fireman must take the staff to the nearest station and seek assistance: if the accident be of a serious character and likely to block the line for some considerable time, special arrangements are usually made for working the traffic to and from both sides of the obstruction.

15. When a ballast train has to work on the line, the staff is given to the driver of such train, and the line entirely closed during its working, until such staff is returned to the proper station.

16. The train-tickets are canceled after use and sent daily from the various stations to the Manager's or Superintendent's office.

The form illustrated below represents an example of the description of train-tickets, employed on the Hoylake & Birkenhead Railway, which are provided with the usual distinguishing colors for the various sections:

Ticket No. RAILWAY.
Train No. (UP)
To Guard
and
Engine-man
You are authorized to proceed from
to and the Train Staff will follow by
at Guard and Signature
Date

For instance, between West Kirby and Hoylake, the tickets are green; between Hoylake and Moreton, red; between Moreton and Dock station, white, etc. These tickets are used on the system already alluded to, and are given up by the engine-drivers to the chief persons on duty at the various stations, who subsequently forward them at the end of the day to the District Superintendent of the line. And in the employment of such tickets, the drivers have to exercise great vigilance and care to be sure they do not leave a station without previously seeing the staff at such station of departure. The kind of staffs used upon this railway are illustrated in figs. 8 and 9. The class represented by the last-named figure are constructed of iron, with projections to serve as wards to fit the ticket-boxes, and act as keys for opening or securing the same. On one end of these staffs are attached brass heads or tablets having the names of their relative sectional stations inscribed thereon, as indicated in the drawings before referred to.

A portion of this railway, between Neath and Colbren Junction, is worked with an ordinary wooden staff with partially flat, angularly formed sides, provided with tongue piece to act as a key, like those illustrated above.

Contributions.

Criticism of Signal Systems.

NEW HAVEN, Oct. 17, 1881.

TO THE EDITOR OF THE RAILROAD GAZETTE:

While I cannot entirely agree with the views expressed by "Hoosier," in your issue of Oct. 14, I am nevertheless glad to see the increasing interest which is being taken in this important subject of uniformity. Among the straws showing which way the wind blows may be mentioned the publication by Mr. W. F. Allen, in the October number of the *Travellers' Official Guide*, of his very valuable and comprehensive table of whistle signals and editorial remarks thereupon, in which he refers to future and similar compilations which may follow hereafter. Coupled with this is the action by the Association of Railway Superintendents at their recent convention in New York in appointing a standing committee upon "Train Rules and Signals," whose Chairman, Mr. Hammond, of the Delaware & Hudson Canal Company, has requested for the committee's use from all railway superintendents copies of their working time-tables and books of rules and regulations now in force. As Mr. Allen says, "Doubtless special reasons could be stated why one form of signal is preferred to another by each superintendent," and "Hoosier" has done well in giving his reasons (and some of them not without force) for preferring a different system of whistle signals from the one proposed by me. The best systems are open to more or less objection, and it is bound to be a question of choosing the least evil rather than the greatest good. There are few managers so experienced and well read that they cannot at times gain new ideas from others, and in order to obtain comprehensive and intelligent action upon a subject of such complexity, which will lead to permanent rather than temporary results, a thorough presentation should be had of the merits and demerits of all existing systems, and the whole subject be thoroughly digested by discussion.

I might take up the cudgel now with "Hoosier" on some points of difference between us, but others, I trust, will present their views, and perhaps I had better wait a little longer before answering in detail.

EDWIN A. HILL.

The Late Wm. Milnor Roberts.

S. PAULO, Brazil, Sept. 14, 1881.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Reading of the death of Mr. Wm. Milnor Roberts in your issue of July 29, I beg to say to you that Mr. Roberts fell sick and died at Barbacena, some 217 miles west of Rio de Janeiro.

The first work committed to him by the government was the project of improvement and docks for the port of Santos, which he afterwards declared a thorough dock in itself, and his projected wharves only await for legislative provision to be carried into effect.

His second task was the examination and completion of projects already done, upon the navigability of the S. Francisco River, up and down the Paulo Afonso Falls.

It is useless to say that his report is received as *le dernier mot* upon the subject.

His third and last application was upon the navigability of the Rio das Velhas, affluent river of the S. Francisco, in

HAND OR ARM SIGNALS FOR DAY USE.

NAME OF ROAD.	1. Stop.	2. Go ahead.	3. Back.	4. Open the train.	5. Train has parted.	6. Ease back.	7. Ease ahead.	8. Run slow.
Atchison, Top. & Sant. Fe...								
Baltimore & Ohio.....	Raise and lower the hand.	Throw one or both hands from the breast outward.	A beckoning motion describing a half circle over the head.					
Boston & Albany.....	Downward motion of one hand with extended arm.	A sweeping parting of the hands on level with the eyes.	A beckoning motion with one hand.					
Central, of New Jersey.....	Waved across the track.	Raised and lowered vertically.	Swung in a circle.					
Central Pacific.....	Raise and lower hand perpendicularly.	Swing hand over the head.	Swing the hand side ways.					
Central Vermont.....								
Chicago & Alton.....								
Chicago & Northwestern.....	Raised and lowered perpendicularly.	Swung over the head.	Swung sideways.					
Chicago, Burlington & Quincy Chl., Rock Island & Pacific....								
Chl., St. Louis & New Orleans.....								
Chl., S. Paul, Minn. & Omaha.....	Raise and lower perpendicularly.	Swung over the head.	Swung sideways.					
Chl., Milwaukee & St. Paul....								
Cleveland, Col. & Indiana.....								
Georgia.....	Moved vertically up and down.	Swung over the head.	Swung across the track.					
Hannibal & St. Joseph.....								
Illinois Central.....							Turning face toward forward end of train, extending both arms, raising both hands as high as eyes and moving them to and from each other.	Raising both arms vertically over the head and holding them in that position.
Lake Shore & Mich. Southern.....	Waved across the body below the head.	Waved over the head.	Two arms extended widely and horizontally.		Both arms thrown up above the head and touching and then thrown down by the sides.			
Lehigh Valley.....								
Louisville & Nashville.....	Swung across the track.	Raised and lowered vertically.	Swung in a circle.					
Maine Central.....	Extending the arm horizontally and raising and lowering it.	Raising arm vertically and throwing it forward in the direction the train is to move, describing a quarter circle.	Swinging arm over the head a little in front of the body toward the rear of train.			Extending one arm horizontally in front of the body and swinging the other over it toward rear of train.		
Marjetta & Cincinnati.....								
Michigan Central.....	Stretching the arm at right angles to body, or waving across the track.	Swing over head in direction train is to move.	Wave arm toward the body.				Moving hand and arm slowly down toward the track.	
Missouri Pacific.....								
New York & New England....	Raised and lowered vertically.	Moved horizontally backward and forward.	Swing in a circle plainly seen from engine.					
N. Y. Central & Hudson River.....	Moved to and fro across the track.	Waved over the head.	Moved straight up and down.					
N. Y. Lake Erie & Western.....								
N. Y. New Haven & Hartford.....								
New York, Penna. & Ohio.....								
Ohio & Mississippi.....	Swung across the track.	Raised and lowered vertically.	Swung in a circle.					
Pennsylvania.....								
Philadelphia & Reading.....	Wave across the track.	Raised and lowered vertically.	Swung in a circle.					
St. Louis, Iron Mt. & Southern Union Pacific.....								
Wabash, St. Louis & Pacific ..								
Wisconsin Central.....	Waved sideways.....	Waved over head.....	Two arms extended with a beckoning motion.		Both arms thrown up above the head, touched together, then thrown down by side.			

tended to be the highway between the great river and our main stem (hitherto) of railways, named Dom Pedro II.

Brazil offered to the genius of Colonel Roberts an unbounded field, and one may say of him, as to Brazil, *non dum tacebat*.

In behalf of truth, the invitation of Colonel Roberts by Dom Pedro was not, at first, met with favorable eyes by our civil engineers, but little by little they acknowledged the personal qualities and the greatness of the titanic skill of Colonel Roberts, and they commenced to love, and admire and look to him as ours, and, in my life, I never remember an engineer's death so widely deplored as that of Colonel Roberts'. It is, also, because he fell, weapons in hand, struggling for the well-being of Brazil.

FRANCISCO H. DE MOURA.

Classification of Brakes.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The increasing importance of having every car equipped with some kind of improved brake is so generally recognized that the inventive faculty of many men is now devoted to the creation of what is hoped will be the accepted improvement, to be generally used, to the satisfaction of the officers of railroad companies, and the enriching of the skillful inventor. An examination of the files of the Patent Office shows so many combinations of the possible elements of a brake, in the patents issued, that it is believed that a good service will be rendered all interested by suggesting a scheme of classification of them. Although the plan to be named may not be the best possible, it will certainly be a great advance on the present lack of any plan, and is presented for what it is worth.

The first distinction is based upon the source of power to operate the mechanism, and determines the "kind" of brake. The next distinction is as to being "automatic" or "non-automatic" in action. The third distinction is as to its being a "train" or "car" brake. The fourth distinction is as to the mechanical element of its construction for the "transmission of force." The fifth distinction is as to the mechanical device for the "application of the force."

The following is an imperfect list of these distinctions: Kind of brake, manual, steam, compressed air, vacuum air, direct-acting draw-bar, power draw-bar.

Division.—Automatic, non-automatic.

Class.—Train brake, car brake.

Transmitting force by.—Rods, shafts, chains, pipes.

Applying the force by.—Cylinder and piston, bellows-shaped rubber cylinder, moving diaphragm, wheels and chain, levers, toggles, screw.

The common hand brake will be definitely described by this classification as a "manual non-automatic car brake, transmitting by a hand-wheel and shaft, and applying the force by a windlass and chain. This, owing to our familiarity with the article and the general acceptance of the title "hand-brake," is only a technical improvement. But apply in the same way these namings of characteristics to some new brake, which it is wished to describe to someone that has no knowledge of it, and all the advantages will be perceived at once. The *Eames* brake in use by the elevated railroads is a "vacuum air, non-automatic train brake, transmitting by pipes and applying its power by moving diaphragms." The Westinghouse brake is of two divisions, as it may be automatic or non-automatic, and is a "compressed air, automatic or non-automatic train brake, transmitting by pipes and applying its force by cylinders and pistons."

Uniformity in Signals.

II.

HAND AND LANTERN SIGNALS.

NEW HAVEN, Conn., Sept. 24, 1881.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In a former number of the *Railroad Gazette* I referred to the lack of uniformity in prevailing codes of bell-cord and whistle signals, which is indeed serious, although there can nevertheless be discerned by a close observer a general undercurrent beneath the apparent confusion setting toward order and uniformity; but when one takes up the subject of hand and lantern signals, it is only to find confusion and chaos reigning supreme.

The three most important and, one might almost say, the only three hand and lantern signals in general use are those signifying *stop*, *go ahead*, and *back up*; and to convey these three orders almost every one of the 36 roads whose signals I have tabulated have with surprising uniformity made use of the same three motions of hand or lantern to convey the same three orders; but, and to say, each road, with even still more surprising perversity, has apparently done its level best so to transmute the meanings assigned to these three simple signals as that its own code should if possible be different from that of any of its immediate neighbors. I could mention many instances where employees of one company upon entering upon the track of another corporation, or upon passing from one division to another on their own line, or, in one case (and that of a trunk line), in passing from one to another section of the same division, are subjected to a complete reversal of meanings of these three principal arm and lantern signals.

And so it happens that the roads have most effectually succeeded in coupling together these three elementary motions and interpretations in well nigh all the varied combinations which mathematical science shows to have been possible in the case.

Out of the 36 roads whose regulations I have tabulated, I have found but two who illustrate their codes of arm and lantern signals with explanatory cuts, and, as I consider this a thing eminently proper to be done and worthy of general imitation, I have inserted these cuts in this article with the explanatory remarks, just as they appear in the working schedules of their respective roads, and have supplemented them by cuts illustrating the English code of hand signals, which I understand to be still in present use; which insertion I think may be of interest at this time.

In general the 36 roads tabulated, if we omit three New England roads whose codes are somewhat exceptional, viz., the Maine Central, the New York & New England and the New York, New Haven & Hartford, all naturally fall into three great classes, which for convenience of reference, I have designated in one of the tables as "A," "B" and "C," represented respectively by the Atchison, Topeka & Santa Fe, the Baltimore & Ohio and the Chicago & Alton railroads; and the only two of these three classes which have any features whatever in common are classes A and C, which agree on the stop signal alone.

So far as lantern signals are concerned, the three classes A, B and C in round numbers are respectively in numerical strength as 14, 9, and 9, and in mileage operate as 16, 12, and 13, and substantially the same ratios hold good in the case of arm signals.

Now, while Class A has a slight advantage in mileage and numerical strength, there are nevertheless certain considerations, which I will now present, which lead me to give Class B the preference, although it must be remembered that there is far more latitude here for discussion and difference of opinion than in the case of the whistle and bell-cord code, since the several systems are so contradictory and are all more or less arbitrary in their nature.

In general, we should seek for a correspondence between the motions of the arm by day and the lantern by night even closer than was sought for between the bell-cord and whistle codes; for the latter are distinct signals, each in independent use both day and night, whereas the former are mutual substitutes each for the other, the lantern signals being used at night instead of the arm signals by day.

Again, hand and lantern signals should be as simple as possible, and of frequent and necessary transitions from signal to signal should be as easy and natural as possible.

Again, gentle motions should signify correspondingly

gentle movements of trains and engines, and *vice-versa*, and hence the stop signal should of all others be the most energetic; and, in general, without now repeating the principles laid down in the case of the whistle code, it may be said that some of those principles apply here with equal force.

Now a swinging motion of a lantern on the arm across the track is not naturally an energetic motion. The very idea of swinging is that of *easy* motion to and fro like the pendulum of a clock, and the swinging of a lamp or flag backwards and forwards is far more appropriate to signify a gentle forward motion of the train (*i. e.*, "Come ahead slowly and with caution," or "Ease ahead," as used by the B class of roads) than as a stop signal. Moreover, engineers are always liable to mistake the motion of the lantern as carried in the hand while walking for the signal "Lantern swung across the track," which in the A codes would cause total stoppage of the train, but in the B codes only a reduction of speed. But what can be a more violent or energetic motion, or one conveying more inherently the idea of stopping than the motion of the lantern, arm or flag straight up and down? The motion is unusual and the transitions of motion at each end necessarily quick and decisive rather than easy and prolonged, as in the swinging signal, and it is this up-and-down motion which the B codes adopt as their stop signal.

In short, the stop signal, being the most important, should be of all others the least liable to be misunderstood; and I think all will admit that the straight up-and-down motion of the B codes resembles no other possible motion of the lantern, is by far the most positive of all the lantern signals and cannot be misunderstood.

Another reason for preferring the up-and-down motion of the B codes is found in its substantial conformity with the standard English code already referred to. The principal distinction between English and American hand or arm signals seems to be one of rest and motion, although a few of the American roads use stationary positions of the arms as signals, as, for instance, the Lake Shore, the Maine Central and the Michigan Central roads. In the case in point the one hand thrown up for caution and both hands thrown up for danger by the English pointsman correspond with the up-and-down motions of the arm and lantern of the codes of Class B.

Again, whenever signals are in use for easing slowly ahead and back, as in switching and car coupling, such signals are almost always given, whether the roads provide a code or not, by raising both hands to a level with or above the head, the engineer being guided by the more or less energetic manner in which the signals are given in regulating the motions of the engine; and these signals must always be terminated by the stop signal, which is given just as soon as the train has been moved the desired distance. Now with the hands raised above the head the mere dropping them to the side is the most natural termination possible, and as it happens is itself the stop signal of the B codes, and no easier transition between these signals and the stop signal can be imagined.

If we should employ the waving of the arm of Code A in this case, not only would the transition be extremely awkward, but it could not well be effected without involuntarily allowing an unnecessary go-ahead signal to intervene.

The principle, however, is not confined to coupling and switching signals. It requires in general that the transition from any signal of motion to the stop signal should be an easy one, and the up-and-down motion is naturally better adapted to fulfill this requirement than are the swinging signals of the A codes.

The arm signals of the B codes for backing up is a very natural one, and the corresponding lantern signal is the same motion with a lantern in the hand added, as was the case with the stop signal. It is simply a swinging or beckoning motion of the arm or lantern from right to left in the direction the train is to move. Similar correspondences prevail as regards the go-ahead signals, the hand waved or lantern swung above the head, corresponding to the outstretched arm of the English pointsman.

These three lantern signals virtually fix the code, and it is here that all discussion must centre and all differences of opinion will arise.

I would not be understood as claiming that the B code is the best possible code, but I have stated a few reasons why I at present favor it. Undoubtedly able argument can be advanced in behalf of the other code; but unless the pros and cons are heard, how can any conclusion be ever arrived at? By all means let us hear from all dissenters.

Taking then these three signals used by the B class of roads as a nucleus, I have aggregated into a system, formulated and illustrated, the subjoined code of hand and lantern signals, which I herewith submit for consideration and discussion to all who may be interested subject in this.

EDWIN A. HILL.

MAINE CENTRAL RAILROAD.

DAY SIGNALS.

"**Stop.**—The signal to stop is made by extending the arm horizontally, raising and lowering it.

"**Go Ahead.**—The signal to go ahead is made by raising the arm vertically over the head, and throwing it forward in the direction the train is to move, describing a quarter-circle.

"**Back Up.**—The signal to back up is made by swinging the arm over the head, a little in front of the body, toward the rear of the train.

"**Ease Back.**—The signal to ease back is made by extending one arm horizontally in front of the body and swinging the other over it toward the rear of the train.

"**Ease Ahead.**—The signal to ease ahead is made by turning the face towards the forward end of the train, extend-

ing both arms, raising the hands as high as the eyes, and moving them to and from each other.

"**Run Slow.**—The signal to run slow is made by raising



Stop.



Go ahead.



Back up.



Ease back.



Ease ahead.



Run slow.

both arms vertically over the head, holding them in that position.

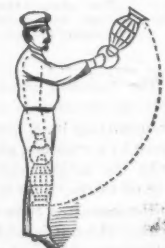
NIGHT SIGNALS.

"**Stop.**—The signal to stop is made by swinging the lantern crosswise of the track.

"**Go Ahead.**—The signal to go ahead is made by swinging the lantern from a perpendicular position beside the



Stop.



Go ahead.



Back up.



Ease back.



Ease ahead.



Run slow.

Car or distance signal.

body forward and upward in the direction the train is to move, describing a quarter-circle.

"**Back Up.**—The signal to back up is made by swinging the lantern over the head toward the rear of the train.

"**Ease Back.**—The signal to ease back is made by raising and lowering the lantern perpendicularly.

"**Ease Ahead.**—The signal to ease ahead is made by swinging the lantern in a small circle at right angles with the

"**Run Slow.**—The signal to run slow is made by extending and raising the arm to an angle of forty-five degrees, holding the lantern in that position.

"**The Signal** showing how many cars to back up is made by raising and lowering the lantern vertically the required number of times.

BALTIMORE & OHIO RAILROAD.

HAND OR DAY SIGNALS.

"**Stop.**—Raise and lower the hand.

"**Go Ahead.**—Throw one or both hands from the breast outward.



Stop.



Go ahead.



Back.

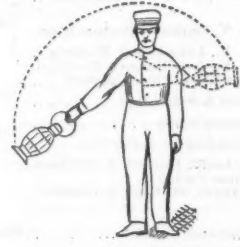
"**Back.**—A beckoning motion describing a half-circle over the head.

LANTERN OR NIGHT SIGNALS.

"**Stop.**—Raise and lower lantern vertically.



Stop.



Go ahead.



Back.

"**Go Ahead.**—Swing lantern with circular motion over the head.

"**Back.**—Swing the lantern from right to left.

ENGLISH CODE OF SIGNALS.



All right.



Caution.



Go slow.

Danger. Stop.

(FROM PAGE 14, OF "DAWNAY ON RAILWAY SIGNALS AND ACCIDENTS.")

Convention of Railroad Commissioners.

The fourth annual convention of railroad commissioners met in Atlanta, Ga., Oct. 11. For the report of the proceedings we are indebted to the *Atlanta Constitution*.

The following states were represented at the meeting: Alabama, W. S. Bragg, Charles F. Ball, James Crook; California, J. S. Cone, C. J. Beerstecher; Connecticut, J. M. Woodruff, J. W. Bacon; Georgia, James M. Smith, Campbell Wallace, Samuel Barnett, R. A. Bacon, Secretary; Iowa, M. C. Woodruff; Kentucky, J. F. Johnston, C. H. Rochester, C. A. Kincaid; Michigan, M. B. Williams; Missouri, James Harding, George C. Pratt; Ohio, H. Sabin; South Carolina, W. L. Bonham.

LANTERN SIGNALS FOR NIGHT USE.

NAME OF ROAD.	Class.	1 Stop.	2 Go Ahead.	3 Back.	4 Open the train.	5 Train has parted.	6 Ease Back.	7 Ease Ahead.	8 Run Slow.
Atchison, Topeka & Santa Fe.....	A	Swung across track.	Raised and lowered.	Swung in a circle.					
Baltimore & Ohio.....	B	Raised and lowered vertically.	Swung with circular motion over head.	Swung from right to left.					
Boston & Albany.....	A	Swung at right-angles or crosswise of track.	Raised and lowered vertically.	Swung in a circle.					
Central, of New Jersey.....	A	Waved across the track.	Raised and lowered vertically.	Swung in a circle.					
Central Pacific.....	B	Moved up and down.	Swung over the head.	Swung across or at right-angles with track.					
Chicago & Alton.....	C	Swung across the track.	Swung over the head.	Raised and lowered vertically.					
Chicago & Northwestern.....	B	Raised and lowered perpendicularly.	Swung over the head.	Swung sideways.					
Chicago, Burlington & Quincy.....	A	Swung sideways.	Raised and lowered perpendicularly.	Swung over the head.					
Chicago, Rock Island & Pacific.....	A	Swung across the track.	Raised and lowered vertically.	Swung in a circle.					
Chicago, St. Louis & New Orleans.....	A	Swung across the track.	Raised and lowered vertically.	Swung in a circle.					
Chicago, St. Paul, Minn. & Omaha.....	B	Raised and lowered perpendicularly.	Swung over the head.	Swung sideways.					
Chicago, Milwaukee & St. Paul.....	C	Swung across the track.	Swung over the head.	Raise and lower perpendicularly.					
Cleveland, Columbus, Cin. & Ind.....	A	Swung across the track.	Raised and lowered vertically.	Swung in a circle.		Swung in a circle continuously at right-angles with the train.			
Georgia.....	B	Moved vertically up and down.	Swung over the head.	Swung across track.					
Hannibal & St. Joseph.....	A	Swung across the track.	Raised and lowered vertically.	Swung in a circle.					
Illinois Central.....	B	Raised and lowered perpendicularly.	Swung over the head.	Swung sideways in the direction of across the track.					
Lake Shore & Mich. Southern.....	C	Swung horizontally across the track.	Swung through a vertical arc.	Raised and lowered vertically.		Whirled round and round vertically across train.			
Lehigh Valley.....	B	Moved up and down.	Swung over the head.	Swung across track.					
Louisville & Nashville.....	A	Swung across the track.	Raised and lowered vertically.	Swung in a circle.					
Maine Central.....		Swung crosswise of track.	Swung from a perpendicular position by side of body forward and upward in direction of train's motion.	Swung over head toward rear of train.			Raising and lowering perpendicularly.	Swinging small circle at right angles to train.	Holding the lantern by arm raised at an angle of 45 deg.
Marietta & Cincinnati.....	A	Swung across the track.	Raised and lowered vertically.	Swung in a circle.					
Michigan Central.....	C	Waved across the track.	Swung over the head in the direction the train is to go.	Moved up and down.					
Missouri Pacific.....	C	Swung across the track or at right-angles with it.	Swung over the head.	Moved up and down.					
New York & New England.....		Raised and lowered vertically.	Moving horizontally on level with face.	Swung in a circle that can be plainly seen from engine.					
New York Central & Hudson River.....	C	Moved to and fro across the tracks.	Waved over the head.	Moved straight up and down.					
New York, Lake Erie & Western.....	B	Moved up and down.	Swung over the head.	Swung across track.					
New York, New Haven & Hartford.....		Raised and lowered vertically.	Moved above the head.	Swung in a half-circle near the ground.	Swung in a full circle.				
New York, Penna. & Ohio.....	B	Moved up and down.	Swung over the head.	Swung across or at right-angles of track.					
Ohio & Mississippi.....	A	Swung across the track.	Raised and lowered vertically.	Swung in a circle.					
Pennsylvania.....	A	Swung across the track.	Raised and lowered vertically.	Swung in a circle.					
Philadelphia & Reading.....	A	Waved across the track.	Raised and lowered vertically.	Swung in a circle.					
St. Louis, Iron Mountain & Southern.....	C	Swung across the track.	Swung in a circle.	Raised and lowered vertically.					
Union Pacific.....	A	Swung across the track.	Raised and lowered vertically.	Swung in a circle.					
Wabash, St. Louis & Pacific.....	C	Swung across the track.	Swung in a circle.	Raised and lowered vertically.					
Wisconsin Central.....	C	Swung horizontally across the track.	Swung in a circle.	Raised and lowered vertically.		Whirled round and round vertically across train.			

The following railroad commissions were not represented: Illinois, Maine, Massachusetts, Minnesota, New Hampshire, Rhode Island, Vermont, Virginia and Wisconsin. Commissioner Wilson, of Michigan, was elected Chairman, and Mr. R. A. Bacon, Secretary of the Georgia Commission, was chosen Secretary of the meeting; Mr. H. R. Hobart was elected Assistant Secretary.

After organizing an adjournment was had until afternoon. At the afternoon session the only business done was the appointment of a committee, consisting of Messrs. Johnson, Bragg, Barnett, Wood and Cone, to prepare business.

SECOND DAY.

At the second day's session the committee reported several resolutions for discussion.

The first of these resolutions was originally proposed by Mr. Woodruff, of Iowa, and was as follows:

"Resolved, That in cases of contiguous states in which one or more lines of railway run having different or varying classifications, it is recommended that the commissioners of such states prepare a uniform classification for the use of such railroads.

Also, that such schedule of classification be recommended to all railway lines operating wholly within the states co-operating under this resolution."

The second was by Mr. Bragg, of Alabama, and was as follows:

"Resolved, That in all cases where a railroad, or combination of railroads constituting one line, extends out of one state into another state, and is under the same general management in each of said states, the railroad commissioners of said states ought to co-operate, as far as possible, in recommending and adjusting joint rates on freights and fares as between said states, so as to avoid the high rates produced by a combination of locals on freights and fares out of one of said states into the other."

Mr. BRAGG indorsed the resolution. In his state the classifications of the Southern Railway & Steamship Association were adopted. These were accepted by three of the great lines which control the railroad interests of Alabama, viz.: the Erlanger syndicate, the Georgia Central, and the East Tennessee, Virginia & Georgia. The Louisville & Nashville, the other great line, had clung to its classifications.

Mr. WOODRUFF expressed belief in the value of moral suasion as affecting railroads where the commissioners have advisory and not mandatory powers.

Mr. KINCAID said he did not have so much faith in the value of moral suasion on great corporations. Recommendations might have their value, but it was where they were directed to legislatures and not to commissions.

Mr. WOODRUFF agreed that recommendations ought to be to legislatures.

Mr. ROCHESTER agreed that all railroad commissions should be advisory.

Mr. WOODRUFF said in his state railroads never refused to grant any request of the commissioners.

Mr. BONHAM said that the commission in his state is merely advisory, and has no power to enforce its wishes. He believed that no recommendation would be regarded unless railroads were forced to do so.

Mr. PRATT said he was willing to join in any recommendation that the convention thought would do good.

Mr. KINCAID said this was an attempt to interfere with interstate commerce.

Mr. BRAGG said that, under a decision of Chief-Justice Waite, in the case of the city of Chicago vs. the Northwestern Railroad, these resolutions did not contemplate any interference in interstate commerce.

Mr. KINCAID said it was simply a waste of time for this meeting to recommend anything on the subject.

Mr. BRAGG opposed the idea of congressional regulation.

Mr. KINCAID said he had laid aside many of the notions he used to hold. He was jealous of state rights, but, like Colonel Sellers, he was reconstructed and ready to go in for the "old flag and an appropriation."

Mr. WALLACE believed Congress alone could regulate this matter, and did not dislike the idea of a national commission.

Mr. JOHNSTON said that some sort of law is needed, for moral suasion has very little force with railroads as far as he had seen.

Mr. ROCHESTER believed in advisory commissions, and said any resolution by this body would be highly respected by the railroads of the entire country.

Mr. BARNETT said the commissioners of various states had different powers. Some are mandatory, others advisory, and we are too apt to look at these questions from our own standpoint. He favored the idea of moral suasion as an influence which the railroads could not resist.

Mr. WALLACE did not believe in moral suasion except where there is some power to enforce its suggestions. After some further discussion both resolutions were agreed to by the unanimous voice of the convention. The other resolutions reported by the committee were as follows:

"Resolved, That a committee of five commissioners be appointed by the Chair to report at a future national convention of railroad commissioners, whether a general law for the regulation of railroad transportation can be so formed as to apply to all the states, and if so, report a draft of such a law at said meeting."

"Resolved, That said committee, in case they conclude that such a law cannot be framed as will apply to all the states alike, report whether they deem it advisable for Congress to regulate railroad transportation between the states, and if so, to report, with their reasons, a draft of a law to be submitted to Congress, regulating transportation as between the states only, leaving to the several states the regulation of rates upon railroads within their boundaries not extending into other states."

Mr. WOODRUFF said that some action on these resolutions should be had, out of respect to the Alabama Legislature, which had requested it.

Mr. PRATT moved to recommit the entire matter to the committee to perfect a law for state rates, but not to touch interstate matters.

Mr. WALLACE said this body had no right to make any recommendation to Congress. Congressional regulation should be invoked if necessary.

Mr. JOHNSTON indorsed these views.

Mr. PRATT said the two resolutions were incompatible.

Mr. BONHAM said if Congress chose it could regulate the matter of interstate commerce without any suggestions from this body.

Mr. WALLACE then offered the following as a substitute, which was agreed to.

"Resolved, That this convention is of opinion that no practical good can be accomplished by a draft of statutes to be submitted to the legislature of each state for the purpose of attempting to secure uniform control of railroad transportation in the several states and from one state into another state."

After appointing Commissioners Harding (Missouri), Woodruff (Connecticut) and Bogue (Illinois), Executive Committee for the ensuing year, and passing the usual resolutions of thanks, the convention adjourned.

THE SCRAP HEAP.

Another New Locomotive.

And now we have the "central power locomotive," a new invention wherein the engine is vertical, and stands between the drivers, the connecting-rod being attached to the middle of the side-rod, which is pulled up and pushed down. Fact!

Patented, of course, so that no one can make one without permission!

We should like very much to be present at the trial of such a locomotive! It is in all respects a very remarkable one.—*Mechanical Engineer.*

Engineers' Club of Philadelphia.

The first meeting of the season was held at the rooms in Philadelphia on Saturday evening, Oct. 5, 1881; President Strickland Kneass in the chair; 27 members present.

The secretary exhibited on behalf of Mr. J. Milton Titlow, screws which had, for 6½ years, held together three 2 inch course of yellow pine planks in the floor of Fairmount Bridge, Philadelphia, which planks had been treated in some manner with creosote. The screws in question are much corroded, the original diameter being diminished about one-third at the middle of the screw, where the fibre of the iron is distinctly exposed. It seemed, however, to be the universal opinion of the members present, that the corrosion was due entirely to the presence of water between the planks, and not at all to the creosote oil, which would preserve rather than destroy the iron.

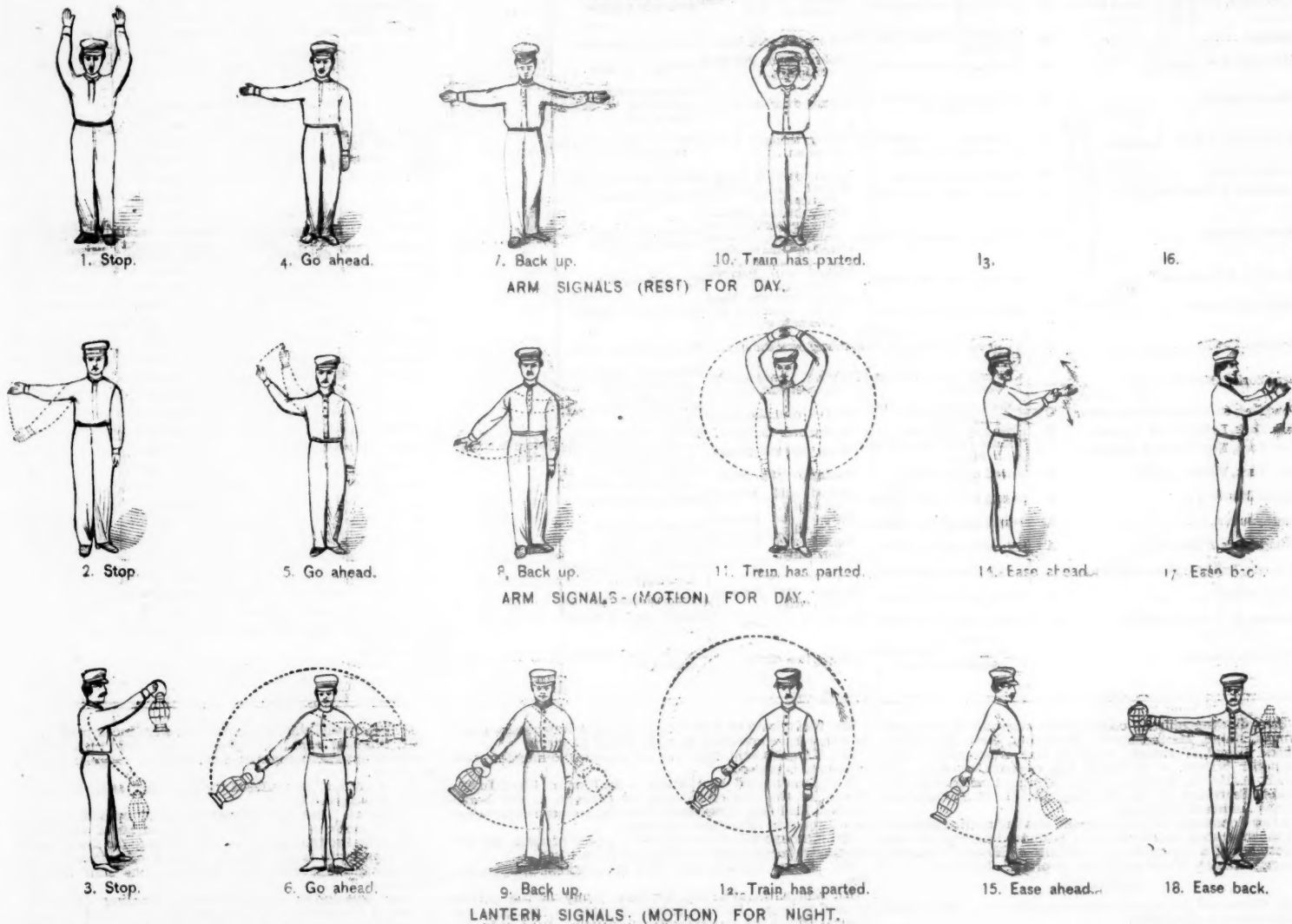
The Secretary exhibited copies of a drawing which had been made by a method giving more economical and better results in many instances than the ordinary blue process. Mr. Frederick Graff stated, in this connection, that the ordinary letter press was the invention of Watt, and that the original was still in existence.

The Secretary read a detailed description of the moving of the Hotel Pelham, at Tremont and Boylston streets, Boston, for the purpose of widening Tremont street. This hotel is built of freestone and brick, 96 and 69 ft. frontage, was forced to its new position by 56 screws, 2 in. diameter, ½ in. pitch, operated by hand against timbers arranged to uniformly distribute the pressure against the building. Two

PROPOSED CODE.

SIGNIFICATIONS.	HAND OR ARM SIGNALS FOR DAY USE.		LANTERN SIGNALS FOR NIGHT USE.
	Hand or arm at rest.	Hand or arm in motion.	Lantern in motion.
Stop.....	1. Both arms held straight up over the head.	2. One or both arms moved vertically straight up and down.	3. Moved vertically or straight up and down.
Go ahead.....	4. The right arm held out horizontally or crosswise of the track.	5. The arm waved over the head and crosswise of the track.	6. Swung over the head and at right angles to the track.
Back up.....	7. Both arms held out horizontally crosswise of the track.	8. Swung sideways from right to left with a beckoning motion in the direction the train is to move.	9. Swung sideways from right to left in the direction the train is to move.
Train has parted.....	10. Both hands clasped over the head.	11. The arms widely extended and brought together over the head and allowed to fall to the side.	12. Swung or whirled round and round in a circle crosswise of the track.
Ease ahead.....	13.	14. Both arms extended level with the shoulder and the hands moved to and from each other terminating in the stop signal when the desired motion is effected.	15. Swung gently two and fro at right angles with the track.
Ease back.....	16.	17. Both arms extended level with the shoulder, the left arm stationary at arms length, the right hand beckoning toward the left and approaching it nearer and nearer with the motion of the train, terminating in the stop signal when the desired motion is effected.	18. Lantern grasped by right hand and moved toward the body on level with shoulders by bending the arm.

PROPOSED CODE.



months and twenty days were occupied in preparation. The moving itself was begun on Aug. 21, and finished on Aug. 25, but the actual time of moving was but 13 hours and 40 minutes. The whole distance moved was 13 ft. 10 in. Four thousand three hundred and fifty-one days labor was required for the work. The whole cost was about \$30,000. This is the largest building that has ever been removed, although larger have been raised, which latter is a much simpler and less risky operation. The complete success of this undertaking is shown by the fact that cracks, which existed in the walls prior to removal, were not changed by the operation. Paper was pasted over them before commencing that any change might be seen.

President Strickland Kneass exhibited a drawing which had been sent to him by telegraph during his recent visit in Europe.

Prof. L. M. Haupt exhibited a note-book, loaned by Mr. John C. Trautwine, containing many complete and beautiful sketches of bridge construction, notably of the celebrated Wernwag Bridge, which crossed the Schuylkill at Callowhill street.

An informal discussion of the necessity and desirability of obtaining better and more extensive quarters for the Club, occupied the remainder of the session.

ANNUAL REPORTS.

The following is an index to the reports of companies which have been reviewed in previous numbers of this volume of the Railroad Gazette:

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Boston, Concord & Montreal..... 315	Min. Lake Shore & Western..... 334
Boston, Concord & Montreal..... 315	Missouri, Kansas & Texas..... 354
Boston, Concord & Montreal..... 315	Missouri Pacific..... 32
Boston, Concord & Montreal..... 315	Mobile & Girard..... 394
Boston, Concord & Montreal..... 315	

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St. Louis, Alton & Terre Haute.

This company owns a main line from Terre Haute, Ind. to East St. Louis, Ill., 191 miles, with the Alton Branch, 4 miles; this line is leased to the Indianapolis & St. Louis road. The company works a line from East St. Louis to Eldorado, Ill., 121 miles, which is made up of the Belleville Branch (owned), East St. Louis to Belleville, 15 miles; the Belleville & Southern Illinois (leased), Belleville to Duquoin, 56 miles; and the Belleville & Eldorado (leased), Duquoin to Eldorado, 50 miles.

The equipment of the line operated consists of 16 engines, 14 passenger and 4 baggage, mail and express cars; 201 box, 25 stock, 500 coal, 30 flat and 4 caboose cars.

The general balance sheet is as follows:

Common stock.....	\$2,300,000.00
Preferred stock.....	2,468,400.00
Total stock.....	\$4,768,400.00
Bonded debt.....	7,000,000.00
Interest due to Dec. 31.....	134,750.00
Due sinking funds.....	635,000.00
Matured coupons.....	83,838.32
Belleville Branch.....	5,592.32
Income account, balance.....	735,286.66
Total.....	\$13,382,542.83

Stock account.....	\$11,382,542.83
Interest due to Dec. 31.....	134,750.00
Due from lease of main line.....	414,106.20
211a receivable, etc.....	241,000.68
Special bond investment.....	308,630.65
Total.....	13,382,542.83

The bonded debt consists of \$2,200,000 first-mortgage bonds; \$800,000 equipment bonds; \$2,800,000 second-mortgage preferred bonds and \$1,700,000 second-mortgage income bonds.

The earnings of the line worked by the company, 71 miles in 1879 and an average of 96 miles in 1880, were as follows:

	1880.	1879.	Inc. or Dec.	P. c.
General freight.....	\$299,999.05	\$229,043.41	I.	\$77,956.24 35.1
Coal.....	248,233.62	204,126.31	I.	44,107.31 21.6
Passengers.....	150,313.19	116,847.08	I.	33,466.11 28.6
Mail, etc.....	30,531.82	22,595.22	I.	7,936.60 35.2
Total.....	\$729,078.28	\$566,602.02	I.	\$163,476.26 28.1
Expenses.....	352,230.36	298,751.96	I.	53,478.40 21.6
Net earnings.....	\$376,847.92	\$267,850.06	D.	\$109,997.86 36.6
Gross earn. per mile.....	7,594.57	7,906.23	I.	371.06 4.7
Net earn. per mile.....	3,625.50	3,885.21	I.	40.29 1.0
Per cent. of exps.....	48.30	51.20	D.	2.90

The rental of the Belleville & Southern Illinois in 1880 was \$147,344.16 and of the Belleville & Eldorado, \$9,082.89, a total of \$156,427.05, leaving a net balance of \$220,420.89. From this the sum of \$43,950 was paid for new equipment, leaving \$176,470.89 surplus.

The traffic of this line for the year was as follows:

	1880.	1879.	Inc. or Dec.	P. c.
Passengers carried.....	169,634	180,204	D.	10,570 6.9
Passenger miles.....	4,744,907	3,915,983	I.	828,924 21.2
Tons general freight.....	262,562	200,890	I.	61,651 30.7
Ton-miles, freight.....	14,558,004	10,551,453	I.	4,006,551 38.0
Tons coal carried.....	378,002	373,146	I.	4,856 1.3
Ton-miles, coal.....	11,307,352	9,960,676	I.	1,346,676 13.5
Av. receipts:				
Per pass. per mile.....	3.17 cts.	2.95 cts.	I.	0.22 cts. 7.4
Per ton per mile, frt.....	2.06 "	2.10 "	D.	0.04 " 1.9
Per ton per mile, coal.....	2.20 "	2.05 "	I.	0.15 " 7.3

The average rate on local general freight was 3.74 cents; on through freight, 1.08 cents. Through freight formed about 63 per cent. of the ton-miles of general freight. The average earnings per train mile were \$2.85; expenses, \$1.46. The average freight train was 23.17 cars. Locomotive service cost 11.6 cents per mile run.

The general income account is as follows:

Balance from 1879.....	\$158,179.03
Minimum rental main line.....	450,000.00
Earnings of line worked.....	729,078.28
Net amount collected from Purchasing Comm.....	432,327.43
Interest, etc.....	4,545.45
Total.....	\$1,774,130.19
Interest on funded debt.....	\$474,000.00
Main line and legal expenses.....	12,235.81
New equipment.....	43,950.00
Expenses of road worked.....	352,230.36
Rentals paid.....	156,427.05
	1,038,843.20

Balance of income..... \$735,286.99

This credit balance of the income account is not an actual cash balance, but is composed principally of claims for rent against the lessees that are now being litigated, and of the nominal par of equipment mortgage bonds, received in part settlement of the suit against the Purchasing Committee.

The earnings of the main line as reported by the lessee were:

	1880.	1879.	Increase.	P. c.
Freight.....	\$945,240.19	\$643,367.54	\$301,872.65	46.9
Passengers.....	312,904.50	271,941.77	40,962.73	15.1
Mail, etc.....	159,518.31	124,713.96	34,804.35	27.9
Total.....	\$1,417,663.00	\$1,040,023.27	\$377,639.73	36.3
Expenses.....	980,723.52	737,020.58	243,702.94	33.1
Net earnings.....	\$436,939.48	\$303,002.69	\$133,936.79	44.2
Gross earn. per mile.....	7,270.07	5,333.45	1,936.62	36.3
Net earn. per mile.....	2,240.72	1,553.86	686.86	44.2
Per cent. of exps.....	69.17	70.89		

Under order of Court the lessee paid over 30 per cent. of gross earnings, being \$422,283.06, or \$22,716.94 less than the maximum rental required by the lease. The total balance due from the lessee for rental on Dec. 31 was \$490,024.92. Some progress was made in the suit to enforce the lease. The main line is reported to be poorly maintained.

During the year 1,000 tons of steel rails and 36,875 new ties were laid. The bridges were generally repaired and several new buildings put up. Two locomotives were bought and 101 box cars, heretofore leased, were purchased.

The Belleville & Eldorado road was leased from July 1 at a rental of 30 per cent. of gross earnings up to \$2,500 per mile yearly, and 15 per cent. on all in excess of \$2,500 per mile. The Belleville & Southern Illinois Company also agreed to reduce its rental charge 10 per cent. on all business from the leased line. The lease resulted in a net profit for the six months of \$9,195.40.

A final settlement has been made in the litigation with the old purchasing committee, under which the company received \$246,000 bonds, \$10,000 income bonds and about \$160,000 in cash; from this must be deducted about \$31,000, expenses of the litigation.

Chicago & Eastern Illinois.

The annual report of this company this year covers a period of ten months only, the fiscal year having been changed to end June 30, instead of Aug. 31 as formerly.

The company owns a main line from Dolton, Ill., to Danville, 107.5 miles; the Indiana Division, from Bismarck to Coal Creek, 24 miles, and the Grape Creek Branch, from Danville to Grape Creek, 7 miles, making 138.5 miles owned. It leases the use of the Chicago & Western Indiana from Dalton to Chicago, 20.5 miles, making 159 miles included in the main line. It also leases the Evansville, Terre Haute & Chicago road (the Terre Haute Division), from Danville to Terre Haute, Ind., 55 miles, of which the use of 6 miles is leased from the Evansville & Terre Haute Company.

The equipment consists of 51 engines; 10 passenger, 7 baggage and 3 combination cars; 569 box, 100 fruit, 111 stock, 3 refrigerator, 2,006 coal, 10 flat and 18 caboose cars; 1 pay car, 1 snow-plow and 18 service cars.

The capital account is as follows:

Stock.....	\$2,908,281.38
First-mortgage bonds.....	3,000,000.00
Income bonds.....	767,810.92
Danville & Grape Creek bonds.....	250,000.00
Bills, accounts and balances payable.....	437,908.77
Income account, balance.....	280,252.53
Total.....	\$7,734,053.60
Road and equipment.....	\$7,090,791.60
Materials.....	67,059.64
Bonds and miscellaneous assets.....	212,499.00
Due for betterments, E. T. H. & C.....	117,891.55
Cash and balances receivable.....	337,071.81
	7,734,053.60

The bonds owned are \$75,000 first-mortgage bonds and \$90,000 Danville & Grape Creek bonds.

In the statements following no comparisons are made for the Terre Haute Division, the company not having the previous year's figures for that line, prior to the lease.

The traffic for the ten months was as follows:

Train miles:	Main line.	Terre Haute Div.
1880-81.	1879-80.	1880-81.
Passenger.....	159,134	74,604
Freight.....	520,997	154,164
Service and switching.....	420,777	52,389
Total.....	1,100,908	281,157
Freight car miles.....	11,496,884	10,108,459
Passengers carried.....	150,128	109,509
Passenger miles.....	4,532,948	4,024,102
Tons freight carried.....	826,387	628,416
Ton miles.....	94,094,283	75,633,209
Av. train load:		
Passengers, No.....	28.49	22.21
Freight, tons.....	180.55	145.22
Av. receipts:		
Per pas. per mile.....	2.56 cts.	2.60 cts.
Per ton per mile.....	0.92 "	0.96 "

Locomotive service cost 15.75 cents per mile on the main line and 15.83 cents on the Terre Haute Division. Of the freight car miles 61.4 per cent. on the main line and 64.5 per cent. on the Terre Haute Division were of loaded cars.

The earnings for the ten months were as follows:

	Main line.	Terre Haute Div.
1880-81.	1879-80.	1880-81.
Freight.....	\$432,507.80	\$386,359.88
Coal.....	414,069.42	204,544.21
Passengers.....	115,692.53	118,311.67
Mail, etc.....	59,271.23	55,710.38
Total.....	\$1,021,540.98	\$844,926.14
Expenses and taxes.....	639,309.12	519,944.43
Total earnings.....	\$382,241.86	\$324,981.71
Gross earn. per mile.....	6,485.98	5,558.72
Net.....	2,426.93	2,138.04
Per cent. of ex.....	62.58	61.54

Main line expenses include \$13,670.05 for Chicago & Western Indiana joint expenses; taxes were \$12,333.96 this year and \$10,142.45 last year. Terre Haute Division taxes were \$4,039.18.

The main line showed an increase of \$176,614.84, or 20.9 per cent., in gross earnings; of \$119,354.69, or 22.9 per cent., in expenses; and of \$57,260.15, or 17.6 per cent., in net earnings.

The result of the year was as follows:

Net earnings, as above.....	\$464,398.72
Rentals on main line.....	\$57,087.74
Terre Haute Div.....	66,800.00
Evansville & Terre Haute tracks.....	2,500.00
General interest.....	2,760.61
Interest on mortgage bonds.....	154,250.00
Income bonds.....	47,835.00
	331,253.35
Surplus for the year.....	\$133,145.37

There was expended on betterments of main line and charged to construction account \$75,202.15. Expenditures on equipment account, for new cars and on contracts for cars, were \$1,939.04, a total of \$168,141.19 for additions to property.

The total expenditures under the lease for betterments to the Evansville, Terre Haute & Chicago road have been \$117,631.55, for which income bonds of the leased road are to be issued to this company.

On the main line the work of reducing the grades at several points has been continued and is still in progress. The equipment is being gradually brought into excellent condition. On the Terre Haute Division 2,574 tons steel rails and 53,724 new ties were used, the bridge over the Wabash rebuilt and the road-bed much improved. The main track is now all steel.

The company was able to run trains to the new stations in Chicago about Dec. 1, but the complete transfer of the business from the Pittsburgh, Cincinnati & St. Louis to the Chicago & Western Indiana tracks was not made until late in the spring. There was also much delay in securing the use of the Chicago & Western Indiana branch to South Chicago, which has only just been accomplished. A large increase in business is expected from the facilities given by this branch to deliver coal to the manufacturing establishments at South Chicago.

The Grape Creek Division was worked about eight months. An extension of five miles to Westville is now ready for business, and a further extension of 16 miles to Sidell's Grove is in progress. This extension will connect with the Danville, Olney & Ohio River road, and an agreement has been made for the use by that road of the 28 miles from Sidell's Grove to Danville and an exchange business.

Ohio & Mississippi.

At the recent annual meeting President McClintock presented a long statement to the stock and bondholders, in which he says:

"The Receiver, acting under the orders of the Court, has reduced the floating debt from the sum of \$1,585,236.01 by the payment of \$1,252,870.36, leaving on Dec. 31, 1880, a residue unpaid of \$332,365.65. He has also paid, under like orders of the Court, the face value of all the coupons on the first mortgage, \$18,155 on account of contributions to the second-mortgage sinking fund, and \$4,155 on account of the first-mortgage sinking fund; all the interest on the second mortgage, Western Division, and on the funded debt and income Western Division bonds; all the coupons on second-mortgage consolidated bonds which have been presented and accrued prior to the appointment of the Receiver; eight coupons on the same mortgage bonds, accrued since his appointment; the coupons on the Springfield Division mortgage bonds, which accrued May 1 and Nov. 1, 1877, Nov. 1, 1880, and May 1, 1881; and the interest on the loans which were secured by the pledge of Springfield Division bonds, in order to avoid the forfeiture of the pledge."

For eight months of 1881 the net earnings of the main line and Springfield Division were \$540,991.77, and the ratio of expenses, 79.53 per cent. The earnings of the Springfield Division failed to meet expenses by \$121,852.25. The claims against the company which should be met in order to relieve it from embarrassment and allow it to regain possession of its property are as follows:

First-mortgage coupons on bonds in sinking funds.....	\$48,823
Four coupons on second consolidated bonds.....	536,480
Five coupons on Springfield Div. bonds.....	351,575
First-mortgage sinking fund, including 1881.....	180,000
Second-mortgage.....	170,000
Total on account funded debt.....	\$1,286,880
Coupons (10) on debentures.....	\$40,000
Due Robert Garrett & Sons, assignees of Smithers & Watson.....	100,000
Due Balt. & Ohio Co., special loan.....	150,000
Other floating debt, about.....	100,000
	390,000
Total to be provided for.....	\$1,685,880

There are beyond these claims certain deposited claims for interest on coupons not paid at maturity—and divers others

unsettled—which, it was thought, might be left to the company to handle and adjust as the exigency of the case might require, but in view of these and of the necessity for an increase in the company's equipment, and for additional facilities and yard-room at Louisville, it was suggested that the round sum of \$2,000,000 should be raised, bearing interest at 5 per cent. per annum. If this should be done, the bond debt of the company, and the annual fixed charges thereon would stand as follows:

	Amount.	Yearly interest.
Income and funded debt bonds, Western Div.....	\$174,000	\$12,180
Second-mortgage Western Div., extended.....	97,000	5,820
First consolidated bonds.....	6,800,000	476,000
Second consolidated bonds.....	3,832,000	268,240
Springfield Div. bonds.....	2,000,000	140,000
Debenture bonds.....	140,000	9,800
Proposed new 5 per cent. bonds.....	2,000,000	100,000
Total.....	\$15,052,000	\$1,012,070
Sinking fund payments.....		74,000
Total yearly charges.....		\$1,086,070

This sum would be diminished at an early day by the taking up of the income and funded debt bonds, the second-mortgage Western Division bonds and the debenture bonds, the new 5 per cent. bonds taking their place, reducing the interest \$7,250 and the sinking fund payments \$40,000 yearly.

Pacific Mail Steamship Co.

This company runs lines of steamers between New York and Aspinwall; Panama and San Francisco; Panama and several Central American ports; San Francisco, Yokohama and Hong Kong; San Francisco, Australia and New Zealand, and between San Francisco and British Columbia. Its report is for the year ending April 30 last.

The general account, condensed, is as follows:

Stock.....	\$20,000,000
Loans.....	1,400,000
Current liabilities.....	362,508
Total.....	\$21,761,598
Steamers and tugs.....	\$10,729,762
Real estate and improvements.....	1,077,912
Coal, supplies, etc.....	479,807
Sundry assets, accounts, etc.....	928,456
Profit and loss.....	8,545,661

The cost of steamers includes \$400,000 paid on account of new steamers under construction.

The earnings for the year were as follows:

	1880-81.	1879-80.	Inc. or Dec.	P. c.
Steamship lines.....	\$4,057,285	\$3,586,442	I.	\$470,843 13.1
Government subsl dies.....	310,188	339,277	D.	29,089 8.6
Miscellaneous.....	35,174	44,163	D.	8,989 20.4
Total.....	\$4,402,647	\$3,969,882	I.	\$432,765 10.9
Expenses.....	3,172,705	3,519,821	D.	347,116 9.9
Net earnings.....	\$1,229,942	\$450,061	I.	\$779,881 173.3
Per cent. of exps.....	72.1	88.7	D.	16.6

The increase in both gross and net earnings was very remarkable and encouraging. The grain was entirely from traffic, the subsidies and miscellaneous receipts diminishing.

The earnings of the several lines of steamers were as follows, the Atlantic line being that from New York to Aspinwall, and the Panama line that from Panama to San Francisco:

	Earnings.	Expenses.	Net or Deficit.
Atlantic line.....	\$745,344	\$456,416	Net... \$288,928
Panama line.....	1,950,507	1,126,258	Net... 824,249
Trans-Pacific line.....	973,472	538,288	Net... 435,184
Australian line.....	307,073	340,441	Def.... 33,368
Victoria line.....	80,880	82,589	Def.... 1,709

Total..... \$4,057,285 \$2,543,992 Net... \$1,513,293

The losses on Australian and Victoria lines are made up by the subsidies received.

The report says: "The war that has existed between the republics of Chili and Peru for several years past is now brought to a close, and this fact will have a most important bearing upon our trade in the near future. The impetus that has been given to the building of railroads and development of the mines of Mexico during the past year by our countrymen increases greatly our business, and, taken together with the steady growth and production of the Central American states, requires a considerable increase of tonnage to take the place of ships that have grown worthless from long use and the loss in running, which has been met by the earnings of our other vessels. This want of tonnage has become so serious a matter that although chartering one vessel at the rate of \$90,000 per annum, to make up the line between San Francisco and Panama, we were still without a spare ship to take the place of any one of those engaged in our different lines should an accident have occurred. At the same time the size and condition of the 'Crescent City' rendered it necessary that another vessel be at once provided for the service between New York and Aspinwall. Fortunately for our wants at this time, the managers of the Brazilian line have concluded to give up that service, having been continually harassed by obstacles in the shape of taxes, port charges, etc., and the Pacific Mail Steamship Co. have become the purchasers of their two steamships 'City of Rio Janeiro' and 'City of Para.' We should build in addition three more steamers of 2,000 tons each, to strengthen our lines on the Mexican and Central American coast. We are aware of the intention on the part of shippers to put steamers on this coast unless we have vessels enough to perform the service, which has not been the case for the last two years."

"Our relations with the Panama and Overland railroads have been maintained upon the most friendly terms during the last year, and the obligations of each to the other have been complied with in every particular, with advantage to the companies concerned, and also to our patrons, the public."

"The managers of your property for several years past have been strongly of the opinion that the China line was not a source of strength, but that the money invested in that service would be more remunerative if employed to develop the trade of the Pacific coast from San Francisco to Valparaiso. Negotiations have been pending for several years for the transfer of the two China ships to the Union and Central Pacific railroad companies, but up to this time we have not been able to agree upon the terms."

"During the year the Supreme Court of the United States rendered a decision awarding \$291,666 to the company for mail service to China, under the contract of Aug. 23, 1873, which was so summarily and unjustly terminated by Congress, Feb. 22, 1875. In July, 1880, a serious accident occurred to the machinery (built in Scotland) of the steamer 'Colon,' necessitating our placing new engines in that ship, at a very great expense. The other steamers of the company have been maintained in a most efficient state of repair as far as was practicable, taking into consideration the age of some of the vessels. The amount and value of coal and supplies on hand for our use have not been allowed to diminish."



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this paper for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

THE FORMATION OF SOUTHERN RAILROAD SYSTEMS.

The progress of railroad consolidation in the states south of the Potomac and the Ohio and east of the Mississippi has been so rapid during the last year or two that it has not been easy at times to keep up with its development. The two most notable recent changes—the transfer of the Virginia Midland and the alliance between the East Tennessee, Virginia & Georgia, the Norfolk & Western and the Shenandoah Valley—have so far completed the process that it is now possible to present a connected view of the various systems into which the railroads of that section are grouped.

This process of consolidation, which has been so marked a feature of recent railroad history, began much later in the Southern states than in the North and West, but has proceeded with so much greater rapidity that in less than two years the work has been accomplished which has elsewhere been going on for the last ten years and more. For this several reasons may be given. The reorganizations through foreclosure have generally been slower and more difficult of adjustment there, and two years ago there was an unusually large number of roads open to purchase in this way. Southern railroad securities were generally at a pretty low point, and it was possible to secure control of a large mileage with a comparatively small expenditure of money. And, while the lines there were fewer in number and their relations less complicated, there is no section of the country where the stock of companies is so largely held by other corporations; so that in many cases the control of one company might go a long way toward the control of its connecting lines. These causes, working together at a time when money could be easily obtained for railroad enterprises, presented an opportunity which enterprising managers were quick to see and use.

The chief business of the railroads in these Southern states (south of Virginia and Kentucky at least) is in the transportation of cotton to the North and to the seaboard and the carriage of merchandise, grain, provisions and fertilizers back to the cotton-growing districts. These, of course, are not the only sources of traffic; the coast region furnishes a considerable business in naval stores and lumber, and in Alabama and Georgia there is a growing coal and iron industry, which is already of importance; but the cotton and the supplies for the cotton growers are the traffic for which the railroads chiefly compete. This competition is on two distinct lines, the older roads having been designed chiefly to carry business to the Northeast or to some of the Southern ports for shipment by sea, while a later system has grown up connecting the cotton states directly with the Northwest, and accord-

ingly the Southern railroad systems have grouped themselves on these two rival lines.

The most easterly of these Southern systems, and, with one exception, the strongest, is that controlled by the owners of the Richmond & Danville road. The Richmond & Danville itself was the best of the Pennsylvania investments in the South, and was for several years the only one of its somewhat unprofitable ventures there which that company retained. It had probably as heavy a local business as any line south of Richmond and north of Georgia, and was able, as the chief road in the so-called "Piedmont line," to keep up an active competition for through business with the poorer roads running through the coast region. A year or more ago, however, this competition came to an end by the sale of the Pennsylvania interest in the road to the Clydes and their associates, who were already the chief owners of the Coast line. A consolidation of the business interests of the two lines was quickly followed by a policy of extension, which soon resulted in the lease of the Atlanta & Charlotte Air Line and a number of minor roads in the Carolinas and Georgia, making practically one system from Richmond to Augusta, Savannah and Atlanta—stopped at those points, however, by the union of the Georgia roads. So far this system is one of completed roads, but its managers have undertaken two extensions, involving the construction of a good deal of new road, one from Atlanta westward into the coal region of Alabama and thence across Mississippi to the Mississippi River, and another, the costly line, which several successive companies have given up in despair, through the mountain region of North Carolina and Georgia into Tennessee at two points, by the old Blue Ridge line and further to the north by the Western North Carolina. This system has lately been enlarged by the addition of the Virginia Midland, extending its terminus from Richmond to Washington and practically to Baltimore. This purchase has not only given the Richmond & Danville control of its Northern outlet, but it has also removed from the field the Baltimore & Ohio, which at one time threatened a formidable competition, but at last apparently decided that the support of its Virginia line by an extension further south would be too costly and unprofitable a work, and so withdrew, as the Pennsylvania had done before, from all its investments south of the Potomac except the line up the Shenandoah Valley.

Independent nominally, but necessarily on friendly terms with the Richmond & Danville, is the Savannah, Florida & Western, which now controls all the rail approaches to Florida, and has secured itself in that position by its new direct line to Jacksonville. This company is apparently content with the Florida business and looks for growth southward, where it has a long line projected down the west side of the Peninsula. It has no other extension in prospect except a short branch to the Chattahoochee on the western end of its Georgia line.

Next to the westward of the Richmond & Danville is the East Tennessee, Virginia & Georgia system, which has lately attracted attention by its rapid extension and ambitious plans. Some time ago this company leased the Memphis & Charleston and planned a consolidated line from Norfolk to Memphis, but it is only within the past year that it has sought extension elsewhere. Within that time it has acquired the old Selma, Rome & Dalton and the Alabama Central, bringing it to the edge of the Mississippi cotton belt; has sought an extension to the southeast by the purchase of the unprofitable Macon & Brunswick road and its extension to Atlanta and Rome, and, failing to secure the Cincinnati Southern, has arranged for a line to the Ohio over the Kentucky Central. This system has its weak points, however. To complete it there is still required some costly work. Its connection from Rome to Atlanta and Macon is hardly half finished, and, even when finished will have no connection with any important seaboard city. Its Atlantic terminus is also at the almost unknown port of Brunswick, which may have natural advantages, but is still destitute of almost everything which goes to make a seaport. So long as this system depended for an outlet on a line to Brunswick, in the extreme Southeast, it seemed woefully lame and imperfect. But the recent alliance with the Norfolk & Western, of which the East Tennessee and the Memphis & Charleston form a direct extension, make it a really important Southern trunk line, the road from Norfolk to Memphis being very direct and 960 miles long—just the distance from New York to Chicago by the New York Central and Michigan Central. A very large part of this long line is in mountainous country, where the fertile valleys are devoted chiefly to grain and stock growing, and very little cotton is grown; but there is much fertile land on the line, and the mountain ranges that shut it in on either

side from Lynchburg to Chattanooga, though they limit the territory tributary to the road, are likely to keep out competing parallel lines and even cross lines. In the whole distance from Lynchburg to Chattanooga, 446 miles, this railroad is not crossed once by another road, though it probably soon will be.

The strongest of all the Southern systems is that of the Louisville & Nashville Company, whose principal lines are at right angles with the East Tennessee main lines. The Louisville & Nashville was the first of the Southern companies to enter upon the policy of extension, and before 1873 it had pretty well covered the ground in Kentucky and in Middle and Western Tennessee, and had extended its line through some of the best country in Alabama to Montgomery. Necessarily quiet for a time after 1873, its managers were apparently roused last year by the ambitious projects of the Nashville, Chattanooga & St. Louis, over which passes a large part of the business to and from the main line from Nashville to Louisville. The Chattanooga Company had secured a line to St. Louis, and begun to complete the gap between its road and the Ohio, when it was suddenly absorbed by its rival, whose managers succeeded in securing stock enough to give them the control and stop further rivalry. The Louisville Company had already extended its road to Mobile by the purchase of the Mobile & Montgomery road, and soon after made the further purchase of the line from Mobile to New Orleans, completing its system by these successive acquisitions from St. Louis and Louisville to New Orleans, and leaving only a few comparatively small gaps to be filled by new construction. In this respect it is the strongest and most complete of all the systems, and it has also probably the lines which carry the heaviest traffic of any south of the Ohio. Whether it has paid too high a price for some of them remains to be seen.

Closely allied with the Louisville & Nashville is the Georgia railroad system, which the Nashville, Chattanooga & St. Louis at one time hoped to control. This system is controlled by the Central Railroad Company of Georgia, and besides its own lines, which have for years pretty well covered Central and Southwestern Georgia and Eastern Alabama, it includes the important line of the Georgia Railroad, the Port Royal road, and will also, it is understood, include the South Carolina road when its reorganization is completed. That is, the system substantially covers all the outlets of the best part of Georgia, a state which is growing more steadily and has a larger local traffic than any other in the Southeast, both to the Western lines and to the old seaports of Savannah and Charleston. It may be interfered with to some extent, but probably not seriously by the East Tennessee Company's line from Macon to Rome, but has substantially no other competitor. It is the great railroad system of the Southeast, and is especially interested in carrying traffic to and from the Southeastern ports, Savannah and Charleston.

The Mobile & Ohio is not a new line, but it has lately completed its road by a short extension from Columbus north to Cairo, where it will make a direct connection for the first time with the lines north of the Ohio. It is, to a small extent, a competitor for through business with the Louisville & Nashville's Mobile line, but locally it is very much by itself and interferes very little with the north-and-south lines on either side of it, except for some hundred miles at its northern end.

The Chicago, St. Louis & New Orleans is the oldest in consolidation of the Southern systems and is the most western of all of them. Running parallel to the Mississippi but some distance to the eastward of it, like the Mobile & Ohio it interferes very little locally with the other north-and-south lines except for about a hundred miles of its northern end. It competes with the Louisville & Nashville at New Orleans and derives strength from its connection with the Illinois Central, by which it is owned, and which is able always to aid it to a very considerable traffic. In connection with it, it forms the shortest line from Chicago and also from St. Louis to New Orleans.

The Alabama Great Southern system is largely on paper as yet and can hardly be completed for years to come. Based upon the line from Chattanooga to Meridian, it has extended its control to the Mississippi at Vicksburg and promises to push its road through to the Texas & Pacific at Shreveport. It has also bought the hitherto worthless Brunswick & Albany line, which it proposes to connect with its Vicksburg line and also to extend to Memphis by lines which are yet mostly to be constructed and whose value is at best problematical. This company has, however, largely increased its importance by securing the lease of the Cincinnati Southern from Chattanooga to Cincinnati—one of the most solidly constructed lines in the South, as it well might be, for

it was built almost without regard to cost. The Southern has, indeed, lately been earning money beyond all expectation, but it remains to be seen whether this is exceptional, and can be maintained. It will, very possibly, suffer from the new connection of the East Tennessee Company with the Kentucky Central, and from other proposed combinations.

The recent purchase of the Paducah & Elizabethtown and Paducah & Memphis roads by the Chesapeake & Ohio indicate the early completion of this line from the Chesapeake to Memphis, which will be a Southern trunk line substantially like the Norfolk & Western and East Tennessee, with substantially the same termini on the Atlantic and the Mississippi, but elsewhere so very far apart—nearly the whole width of two states being between them in places—that they will not be at all in each other's way. The Chesapeake & Ohio, however, has some pretensions to be or become a Northern as well as a Southern trunk line. It will reach Cincinnati and other Ohio River towns, and through them places further north, and afford them, as well as Memphis, a short outlet to the splendid harbor at the mouth of the Chesapeake. This will be a trunk line to the seaboard intermediate between the Baltimore & Ohio and the East Tennessee, but quite distant from either. Like the other Southern roads that reach the Mississippi it will be in position to secure a share of the growing Texas and Southwestern traffic. But it is not so well placed as some other lines to serve as an outlet for the roads in Texas, in which its President is interested, as [these point to Galveston and New Orleans and not to Memphis. But the through traffic which these roads and also the Southern Pacific will be able to supply to a railroad to the Atlantic must be very light, and this side of the Mississippi is not likely to be very profitable.

A single article hardly gives room enough for a proper treatment of the railroad system of the South; but what has been said above may suffice to give a clearer and more connected view of recent changes there than has hitherto been possible to those who have not made a special study of the subject.

ATLANTIC GRAIN RECEIPTS.

Last week we made a study of the receipts of grain at the eight Northwestern markets during the nine months ending with September, also of the receipts at New York by the several routes, and of the exports of four Eastern ports. We now analyze the receipts at the seven Atlantic ports for the same period. The distribution of the grain among these ports is a subject of more than usual interest at this time, because of the talk there has been of the differences between the rates to New York and those to Philadelphia and Baltimore—differences which have been in existence now since 1875, though it is not possible to say how closely they have been maintained during the long periods of railroad war which have occurred in every year except last year, and perhaps 1877, on the east-bound freight.

For the purpose of observing the effect of the differences in rates, the statistics of the grain traffic are sufficient. Philadelphia and Baltimore have a large grain trade, but their export trade in provisions and flour is insignificant and increases very slowly, and neither do their imports increase as fast as the New York imports.

For the nine months ending with September receipts and shipments of grain of all kinds at the seven Atlantic ports have been, in bushels, as follows, for six years past:

	1876.	1877.	1878.
New York.....	48,897,606	45,839,990	88,440,067
Boston.....	9,377,292	9,604,303	14,234,105
Portland.....	1,799,742	851,943	1,540,832
Montreal.....	9,925,222	8,174,067	10,002,673
Philadelphia.....	23,770,900	13,780,770	29,017,510
Baltimore.....	21,898,024	20,596,784	30,497,300
New Orleans.....	4,505,104	5,644,157	8,618,011
Total.....	120,174,790	104,561,014	182,251,098
	1879.	1880.	1881.
New York.....	90,579,959	106,110,973	88,721,421
Boston.....	15,236,835	18,186,900	17,255,611
Portland.....	1,061,079	2,037,540	1,313,042
Montreal.....	10,469,193	13,311,615	9,219,003
Philadelphia.....	35,528,525	34,507,875	20,490,744
Baltimore.....	42,888,380	40,235,217	31,813,355
New Orleans.....	8,794,758	15,788,202	15,290,011
Total.....	201,558,529	230,179,072	184,109,187

This shows a decrease in the aggregate receipts this year compared with last year, amounting to 46,070,000 bushels, against which may be counted an increase in flour equivalent to 9,000,000 bushels of wheat. The grain receipts are also 20,450,000 bushels less than in 1879, and not 2,000,000 more than in 1878.

There is a decrease at every port, without exception, but it has been smallest, both in amount and percentage, at New Orleans. New York's decrease is 17,400,000 bushels (16½ per cent), Philadelphia's 14,000,000 (40 per cent), Baltimore's 8,400,000 (21 per cent), and Montreal's 4,100,000 (31 per cent). Boston loses but 5 per cent, and New Orleans but 8½ per cent.

The percentage of the total received at each of the seven ports each year during the nine months ending with September has been:

	1876.	1877.	1878.	1879.	1880.	1881.
New York.....	40.7	43.8	48.5	44.3	46.1	48.2
Boston.....	7.8	9.3	7.8	7.4	7.9	9.4
Portland.....	1.5	0.8	0.9	0.5	0.9	0.7
Montreal.....	8.3	7.8	5.5	5.1	5.8	5.0
Philadelphia.....	19.8	13.2	15.9	17.4	15.0	11.1
Baltimore.....	18.2	19.7	16.7	21.0	17.5	17.3
New Orleans.....	3.7	5.4	4.7	4.3	6.8	8.3
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

New York's proportion, therefore, is larger than in any other year except 1878, and nearly as large as then; Boston's is larger than in any other year of the six; Montreal's and Philadelphia's smaller—the latter much smaller; Baltimore's smaller than in any other except 1878 (the year that New York's was largest), and New Orleans' percentage is larger than in any previous year in the table.

Comparing New York's percentage with that of Philadelphia and Baltimore taken together, we have:

	1876.	1877.	1878.	1879.	1880.	1881.
New York.....	40.7	43.8	48.5	44.3	46.1	48.2
Phil. and Balt.....	38.0	32.9	32.6	38.4	32.5	28.4
The three.....	78.7	76.7	81.1	82.7	78.6	76.6

In 1876 Philadelphia and Baltimore together received nearly as much grain as New York; in 1878 (when the total receipts were nearly the same as this year), 67 per cent. of the New York receipts; in 1880, 70 per cent. of them; this year, not 60 per cent. of them, and a much smaller proportion than in any other year in the table.

Taking the percentage of New York and Boston together, and comparing with that of Philadelphia and Baltimore, we have:

	1876.	1877.	1878.	1879.	1880.	1881.
New York and Boston.....	48.5	53.1	56.3	51.7	54.0	57.6
Phil. and Baltimore.....	38.0	32.9	32.6	38.4	32.5	28.4
The three.....	86.5	86.0	88.9	90.1	86.5	86.0

The two northern ports this year have received more than twice as much as the two southern ones, and a larger proportion than ever before in six years. In 1876 New York and Boston received but 11,606,000 bushels more grain than Philadelphia and Baltimore, and this year in the corresponding nine months the two former have received no less than 52,673,000 bushels more than the two latter; last year, 27,400,000 more. The railroad war of 1876 was understood to be waged particularly for the purpose of preventing the diversion of grain from New York to Philadelphia and Baltimore. However well it may have served its purpose, compared with past policies, it certainly did not serve it so well as the other policies (or circumstances) of following years, and especially of this year, in spite of the fact that the low rail rate of the past summer has greatly reduced the deliveries by the canal, which is usually the chief carrier of grain to New York, and which carries to New York only. But for this railroad war there can hardly be any doubt that the receipts at New York would have been considerably larger in amount and a larger proportion of the whole even than the very large amounts they have been actually. The gain is due, apparently, largely to the better facilities the roads now have for delivering at New York. We showed last week that the Pennsylvania had brought to New York this year 5,500,000 bushels more grain and flour than last year. Meanwhile we see above that the total receipts at Philadelphia, most of which are brought by the Pennsylvania (but sometimes considerable amounts also by the Erie and the New York Central), were 14,000,000 bushels less than last year.

If we take the rail receipts at the Atlantic ports separately, we will find that they have been as follows at New York and in the aggregate at the other ports since 1875, for the nine months ending with September:

	New York.	Elsewhere.	Total.	P.c. at New York.
1876.....	43,049,950	82,706,335	125,756,285	34.2
1877.....	31,161,614	62,604,636	93,766,250	33.2
1878.....	65,376,125	121,740,591	187,116,716	35.0
1879.....	78,113,271	151,357,782	229,471,053	34.0
1880.....	78,734,359	148,123,439	226,857,798	34.8
1881.....	70,793,231	129,534,119	200,327,350	28.1

Thus for five successive years ending with last year New York had received nearly the same proportion of the rail grain, varying only from 33.2 to 35 per cent. of the whole. This year its proportion has suddenly increased to 38.1 per cent. of the whole. This year, when the rail deliveries at the other places are 18,600,000 bushels less than last year, at New York they are 1,060,000 bushels more, and more than in any previous year.

A railroad elevator is comparatively a new thing at New York, and in this the other ports formerly had greatly the advantage. A few years ago the New York Central established an enormous one, which was last year supplemented by another, and within a year both the Erie and the Pennsylvania have completed their elevators at Jersey City. Then the other commerce has caused a considerable increase in the num-

ber of steamers, and steamers run preferably to New York, which is the destination of by far the larger part of the immigrants and imports. This great tonnage accepts rates on grain frequently which would not tempt a vessel if it had not much other better-paying cargo, and some return cargo, little of which can be had except at New York and Boston. In addition to this, we have this year a small amount of grain to ship from the parts of the country which hitherto have given Philadelphia and Baltimore a large part, if not the larger part, of their receipts—that is, the country immediately on the lines controlled by the Pennsylvania and the Baltimore & Ohio railroads. All these are natural causes that have given New York an exceptionally large portion of the grain this year, just as extension of the Baltimore & Ohio and Pennsylvania systems some years ago and the heavy crops of the Ohio Valley from 1877 to 1880 increased the receipts of Philadelphia and Baltimore in 1876 and other years.

STEEL AND IRON IN CAR WORK.

The Car Builders' Association recently reported upon this interesting topic, but, unfortunately in terms that do not seem to show any very clearly defined views upon the subject. This, perhaps, is not strange, for the transformation is one that cannot be made hastily if real success is to be achieved in the use of new material. In fact, it is really impossible that the change should be made at short notice. This would require a remodeling of tools and arrangements generally, in car shops, such as few private builders would be disposed to make so long as work could be had in any reasonable amount for their existing wood-working plant. The railroad shops are generally full of work when there is anything at all doing, and entirely, or nearly, closed when work is slack. In the one case no time or attention can be devoted to the subject, and in the other no funds can be had for the development of the new form of work.

It is by no means a new thing that iron should be proposed for such service, although steel has but lately come to the front; but it is a little doubtful whether really hard labor has yet been bestowed upon the question, not of making wooden cars out of iron beams and bars, but rather the question of making an iron or steel car that shall do the usual work in the best way. No one can deny that the present car-bodies and frames generally answer an admirable purpose, but it is certain that to take out a few timbers from the plan of a piece of framing and to put in iron beams of the same length is not the only way, nor is it hardly the true way, to replace wood with iron in this class of work. One of the worst disasters known in the entire history of engineering construction was caused largely by the failure of an attempt to substitute iron in the place of wood, or to use iron in a design which could be properly carried out only with the use of wood. To use wood in a given piece of construction work may be a strictly proper and advisable thing, but to transform the design of the work and make it one in which iron may properly be used is quite another thing, and it is this last phase of the question that needs more study.

Probably the first really effective step toward the transformation will be, and must be, a complete collation of comparative weights of parts, and an estimate of the loads or strains each must bear. Too often the descriptions of such work, or of changes made or recommended, have been descriptions merely and not comparisons. In no other way can the combined experience of the master car-builders be so well brought to bear upon the problems involved in this substitution as by this statement, in comparative form, of the result of their study and effort toward the common end—the statement in the first place in weight and cost of what has been done in wood, so that upon the actual current facts of the case the attempt may be based intelligently for improvement.

It is a rare thing that comparative statements or showings of such facts do not lead to clearly marked improvement in the practice of those who contribute; for, as it has been aptly remarked, fifty men are likely to know more, on this class of subjects at least, than one man; and as any one out of the fifty may be taken as the one least enlightened, the possible gain all around may be clearly seen.

It is doubtful whether any private car-builder will be a successful pioneer in this change to the use of iron; for, as a rule, no one of them has or can have a tenth part of the opportunity to watch the working, under ordinary conditions of practice, of the modified and improved arrangements of parts. No one can doubt the energy and watchfulness of the railroad men in such directions when real opportunity is given, but it is too often true that a car department is so

fully occupied with current repair, or with the new work needed, that little time remains for this original study or contrivance. One trouble encountered in the actual working out of the problem is the fact that the actual trial or test of new plans of this kind must necessarily be a work of considerable time. If a thing put into use to-day must be given a year in which to show up its weak points, the actual progress which can be made in the general introduction of such changes must be slow. Railroad men cannot be blamed for being conservative and willing to let well enough alone, for the money total likely to be involved in a change, which to be most useful must be radical and universal, is often so large that they shrink from the risk of failure, or of a partial success, which sometimes appears to be nearly the same thing.

One further condition attending the use of iron or steel in car work, that gives or would give some reasonable ground for objection, is the greater cost of repairs due to collision or any similar cause. The cutting away and replacement of a damaged end, for example, is easy in wood, but it is a very tedious thing in iron, and would be worse in steel. It is very doubtful, too, whether any probable combination could be made of iron beams or plates that would resist much better or beyond the fear of damage the end thrusts that so often lay up the wooden car.

It is hardly needful to remark that much of the work already done in this transformation of car plans and materials has been judicious and will endure. It is nevertheless true that until the close comparative study of the whole subject has been made, as already suggested, the outlook for car-builders' orders will not be very encouraging to the rolling-mill owner, who is beginning to think what he shall do with the product of his works when the existing pressure of orders shall decline.

The Examination of Railroad Employees.

The examination of railroad men, *i. e.*, the formal examination as to their fitness for positions, is one of those subjects which may be looked at with such different results from so many points of view that any light of actual experience is doubly valuable. It is valuable as experience, giving results, and still more so as something definite to examine, as putting the question where it can be discussed as a practical matter, immediately connected with the every-day affairs of a railroad. The Superintendent of the Amboy Division of the Pennsylvania road has been for some time developing a method for examination of men under him, and has at last got it into very definite shape. He keeps three books, one for conductors and brakemen, another for engineers and firemen, and a third for applicants for positions on the road. The examination form demands the physical characteristics and condition as to health of the man; his domestic relations (has he a wife, children?) his general appearance and manners, and a short history of his occupation before entering the service and of his record while in it. It then asks his ability to discriminate colors, his knowledge of railroad matters in general, and in particular of the book of rules, the management of trains and the use of air brakes, and finally the extent of his general information. These facts are all ascertained by a careful and discriminating examiner, dealing with each man by himself, and seeking less to question than to draw out his man in a perfectly natural and easy way.

Now, putting aside all questions as to the utility of examinations of this sort for the purpose of comparing one man with another, it will be observed that all these required facts, ascertained and recorded by a careful and competent person, give the superintendent a complete and excellent knowledge of his men. He knows just where to find each one, and all about him; he is no longer trusting to a tricky memory, for unless we are mistaken, the memories of the majority of busy men play them very queer tricks when they rely entirely upon them for facts of this kind. It is not uncommon to see such men put the wrong coat on to the wrong man, because their minds have confused together several periods, or several men.

Again, the effect of such an examination upon the men should be noted. As a fact, its effect, and its immediate effect, is to brighten up their minds, and their interest in the knowledge and theory of their business, as probably nothing else would do. Talk to such men about preparation for their work, and you are speaking in a room whose roof is the azure zenith; but make certain requirements for them, and test them as to these, and the matter is brought right down into their cabs and cabooses; it is no longer an indefinite something or other, but a very immediate and pressing matter of business. If men are not intelligent about their duties it is in general the fault of the company's standards of practical requirements.

The third aspect of such an examination is whether it serves any purpose as to the comparative fitness of one man above another for the same position. On this point it must be said that, as to enginemen, it is of less use than those who are inclined to advocate it suppose. The only test for any man is the practical one—What sort of work does he do and how far does his present performance give promise of better? The best man to make this estimate is the road master of engines or whoever has immediate charge of the engine-men. In proof of this, or rather as an illustration of it, two firemen on the Amboy Division were candidates for promotion. The Superintendent would have chosen one, but his foreman of engines stoutly recommended the other. The promoted one passed a comparatively poor examination except on practical points about the locomotive. His rival passed his examination on all points with honor, especially as regards general information. These two represent classes of men, (1) those whose knowledge is all in practical fact and comes out only in good judgment on definite pieces of work to be immediately done; (2) those who have admirable general, or what may be called *thinking*, knowledge, but have little or no power to put it to practical use except perhaps in some special direction which has nothing to do with machines. They would, for instance, make good teachers, accountants, etc., but they make only fair or very poor machinists.

Between these two classes lie all sorts of combinations of both. As to trainmen, however, this sort of examination is evidently, on the face of the results, an admirable thing. It shows immediately where a conductor stands, how well he knows his business; for besides the requirements of the form mentioned, each conductor and passenger brakeman was rated by the accounting department as to his knowledge of figures.

A conductor must be a man of some general intelligence, and he must certainly fully understand all the rules, signal methods and train methods, and fully comprehend the use of all brakes used by the company. If there is any point where he is deficient, it should evidently be discovered to him.

This examination has made plain a number of interesting facts, and among them this one, that the firemen and the young men in general show the effects of good schools in their brightness and clearness of mind above that of their seniors. The day of light and knowledge is already bright enough to allow railroad companies to demand a higher standard of their men; and the only way to enforce this is by such a system of regular examination properly conducted on sound principles.

Local and Suburban Passenger Traffic.

II.—RATES.

It would not be far from the truth to say that on this matter of rates each general passenger agent has a bit of pet philosophy, and that he is guided by it quite as much as by any hard facts which he has learned from pure experience.

As a rule, rates are reduced because of competition of some sort; but even in those cases in which rearrangement has been quite a matter of choice, as the recent reductions on the Delaware, Lackawanna & Western and on the Hudson River Division of the New York Central & Hudson River Railroad, it is not easily possible to give the consequent result, because so many other and more influential circumstances than rates have also changed. In the last two years the increased income of a large mass of our people has enabled them to purchase more of everything, transportation included; now much more they have purchased of any article because it has been moderately reduced in price, as local rates have been, only a genius for statistical reasoning on human affairs is likely to tell us. A general passenger agent, together with his other numerous duties, should undoubtedly cultivate a talent for this sort of reasoning; but amid the constantly changing social and financial conditions of our people—these affecting the mass of people more than in any other country—it is not easy to say in any given case whether as a fact a certain moderate reduction in rate per mile has had this or that definite result.

It has been the opinion of every passenger agent seen in the course of this investigation (which, by-the-by, has necessarily been confined to opinions) that every reduction of rates has in time been followed by an increase in travel sufficient to justify it. That this increase has been caused by the lower rate few would maintain against the opposing opinion.

It is evident in this uncertainty that there is a large place for that bit of pet philosophy of which we have spoken. This bit is absolutely necessary.

Practical results of a general passenger agent's movements in these matters are so mixed with causes over which he has no control, and with which he has little to do, that he must have some sort of guide. In assuming, therefore, that certain results will follow on certain changes of rates, he is doing what every man must do who deals with a large mass of individual human beings. All that one can ask of him to do is his best to find whether the experience which comes after his reasoning does on the whole confirm it.

These bits of philosophy supplement rather than oppose

one another; those discovered may be formulated somewhat as follows:

1. That a lower rate is followed by increased travel, although by no means always sufficient to make good the decreased net income.

2. That no large amount of travel will be created by any moderate reduction of rates as such. The desire, the occasion for travel must exist, and some method must be discovered for making the rate find this; or if left to time, the desire or occasion will eventually find and use the rate.

3. That there is a margin of arbitrary choice in the relation of rate to income: a lower rate allowing a somewhat greater traffic, a higher rate a somewhat less, but both immediately, or within a moderate period, giving about the same financial results.

A large number of passenger agents would, we think, admit these statements as probably true, and from them there follow certain conclusions, which like good old bills, limit a little the wide field of uncertainty, as follows:

It is better to choose the lower rate if it will yield the same net income, because it may be found and used by a greater number of desires and occasions to travel.

That the tendency of travel must be studied and the permanent occasions for it encouraged by a rate rather than an attempt made to originate travel *de novo*.

Here we will state a few facts gathered from a variety of roads by way of proof and illustration, if such be needed.

A suburban village; newly built houses, but still largely unoccupied; rents probably less than at other points of the same convenience; the round-trip rate is reduced to the former cost of one fare, and a large travel follows. A low rate by horse cars (time 1 to 1½ hours) had long existed.

A number of large towns with a busy manufacturing population; rates are reduced and there follows an increased traffic in return tickets (limited) to and from each other, and to and from their suburban points. In contrast, much smaller towns, like reduced rates, and no corresponding traffic.

To a large terminus, rates on unlimited return tickets are reduced 20 per cent., followed by a satisfactory increase in travel, observable at definite points (30 miles) as well as on the whole line.

In contrast, a small city, no competition to a large terminus, but the rate is already two cents per mile; package tickets are introduced, and everywhere used for change as premiums with other articles, etc., but the General Passenger Agent's summing up is that the 10 per cent. reduction on the package tickets has been thrown away. The character of the population, the relation of existing rate to existing needs and occasions for travel, must be carefully studied. With another class of population there are good reasons for believing that a different result might and would have followed.

Except in cases of very near points suburban to a city, and of workmen's tickets, no clear case of an increase of travel from a reduction of a rate of two cents per mile has been noted. The rate on the New York Central & Hudson River Railroad was formerly 2½ cents per mile in winter; within two years it was (without previous notice) reduced to two cents per mile, package tickets having been introduced the previous spring, selling for about 10 per cent. discount.

In expectation of the usual advance in the autumn, a very large number of these tickets was purchased, in so great quantities that the station agents became frightened and telegraphed for orders.

It is the impression that these have increased travel, as they have been used for change, for premiums, gifts to tramps, etc., bought in quantities by families, etc., being in this way so circulated as to enable them to find any occasion or desire for travel which anywhere existed. Still, this large purchase in advance of needs makes the immediate summing up impossible.

We have given some general opinions; the following table will give some general facts. It should be observed, however, that difference in policy as to the return, tickets and the lower rates of these tickets, would modify the various estimates:

Rate per mile.	No. of roads having this rate as their—
Cents.	Local rate. Through rate
2	3
2½	2
3	38
3½	16
4	33
4½	6
5	38
5½	1
6	—
7	—
7½	—
8	3
9	—
10	2

Railroad Legislation in New York.

Many readers will remember the litigation over the question whether elevated railroad structures are taxable as real estate. The former tax law of New York declared that taxation of land should include the land itself, "all buildings and other articles erected upon or affixed to the same," etc. The Court of Appeals decided, as the outcome of a long lawsuit, that the structures erected by the elevated railroad companies in New York streets were articles erected upon or affixed to the land—in other words were fixtures—and might be taxed to the company owning them, notwithstanding the land to which they were affixed, *viz.*, the streets, was not owned by the company, but belonged to the city. The discussion seems to have drawn the attention of

the Legislature to the probability of other like questions; for a new definition of the words "land," "real estate," "real property," has been enacted. The new law (which is now published as Chapter 263 of the Laws of 1881) authorizes taxation of "all buildings and other articles and structures, substructures and superstructures erected upon, under or above, or affixed to" the land; all wharves and piers, bridges, telegraph lines, etc.; "all surface, underground or elevated railroads; all railroad structures, substructures and superstructures, tracks and the iron thereon; branches, switches and other fixtures permitted or authorized to be made, laid or placed in, upon, above or under any public or private road, street or grounds;" all mains, pipes and tanks set. Special regulations for assessing the property pertaining to telegraph lines are imposed by Chapter 597 of the same volume.

Two years further time is given by Chapter 338 of the Laws of 1881 to any elevated railroad company (except New York city companies) which has actually constructed some portion of the road, but has not yet completed construction within the time prescribed by law.

By Chapter 496 of the Laws of 1881, the law of 1877 to punish trespassing on railroads has been amended to read as follows:

"Any person who shall wilfully place any obstruction upon any railroad, or loosen, tear up or remove any part of a railroad, or displace, tamper, or in any way interfere with any switches, frogs, rail, track, or other part of any railroad, so as to endanger the safety of any train, or who shall wilfully throw any stone, or other missile, at any train on any railroad, or at any street car or omnibus upon or in which there shall be at the time any passenger or passengers, shall, upon conviction thereof, be punished by imprisonment in a state prison not exceeding ten years, or by fine not exceeding one thousand dollars, or by both such fine and imprisonment."

A general incorporation law was passed authorizing any number of persons not less than ten, a majority of whom shall be inhabitants of the state, to form a company for constructing and operating a railroad in any foreign country; and in connection with such road the company may maintain a telegraph line or auxiliary line of vessels. The unwritten purpose of the law may have been to facilitate the initial operations of General Grant and the persons interested with him in opening railroad communication in Mexico. Of course it is obvious that no law passed by New York can have any effect in Mexico or any foreign country to give a right of way, or authorize laying track, running trains, or charging tolls or fares. These matters must depend on some grant, concession or law obtained from the foreign government. The utility of the New York law is this, that it gives promoters of plans for foreign railroads a corporate existence for the purpose of developing the scheme; they can make contracts, employ negotiators, surveyors, etc., without making themselves individually liable, and can go forward in efforts to obtain a franchise abroad in confidence that any rights they acquire will be represented by corporate stock and will not be disturbed by change or death among members. The New York law, which is Chapter 468 of the Laws of 1881, directs the persons proposing to form a company to file written articles of association stating various matters particularly described; it also defines quite precisely the corporate powers of any such company when formed, and the duties and course of proceeding of directors.

Chapter 470 of the Laws of 1881 regulates fares on surface steam railroads outside of cities and not more than 15 miles long; and Chapter 675 gives new directions intended to facilitate the payment of school taxes by railroad companies.

The foregoing are believed to be the only enactments of general interest affecting railroads, found in the volume of laws for the year, lately published. There are also some provisions applying only to some particular company or in some limited locality. Perhaps the act to provide against accidents on elevated railroads may be considered of this character; it is, however, general in its terms, and will come into operation in other cities than New York whenever they build elevated roads to which it can apply. It gives minute directions as to stopping and starting trains, entrance of passengers, construction of gates upon the cars, giving the conductor's signal to start, etc., etc. It is Chapter 899 of the Laws of 1881.

Erie Earnings and Expenses.

New York, Lake Erie & Western earnings and expenses were this week reported for the month of August last, and for the eleven months of the company's fiscal year then ending. August was a very bad month for earnings from through business of every kind, yet the company reports, compared with the exceptionally favorable August in 1880, an increase of \$166,021 (10% per cent.) in gross earnings, which, notwithstanding the increase of \$137,587 (14% per cent.) in working expenses, leaves an increase of \$28,183 (4% per cent.) net in earnings. Any increase, under the circumstances, is astonishing. The Erie, however, had a heavy traffic in August. It delivered at New York that month 3,863,000 bushels of flour and grain, against 2,178,000 last year. The gross earnings from this traffic, however, not to say the net, must have been considerably smaller this year. The coal traffic this year was not only much larger but much more profitable than last year, and this road has had a great deal of it, and this doubtless has saved it from a great reduction in profits.

For four successive years the gross and net earnings and working expenses of this road in the month of August have been:

	1878.	1879.	1880.	1881.
Earnings....	\$1,445,929	\$1,450,223	\$1,608,872	\$1,772,895
Expenses....	870,125	858,986	957,085	1,095,324
Net earnings.....	\$569,803	\$591,237	\$651,787	\$677,571

If the increase over last year is small, that over 1879 is

large, amounting to 22% per cent. in gross and 14% per cent. in net earnings, though expenses are 27% per cent. greater. The comparison with 1879, however, does not show the enormous increases in net earnings common in previous months—as 113 per cent. in July, 150 in June, 145 in May, 45 in April, 71 in March, 34 in February, and 65 in January. The smaller increase in August, however, marks a time when the profits began to be large in 1879. The net earnings are a trifle larger in August this year than in July, and are actually above the average monthly net earnings for the fiscal year, which have been \$625,245, against \$677,371 in August. August was a month of enormous shipments of west-bound freight, carried at about half rates, and of an enormous through passenger business, carried west at about one-third regular rates, and neither these nor the east-bound freight mentioned above can have added either to the gross or the through earnings, unless a large part of the reductions were by rebates not paid or charged in that month.

For the eleven months of the fiscal year ending with August, the report shows this year an increase of \$2,074,714 (12% per cent.) in gross earnings, of \$1,488,087 (14 per cent.) in working expenses, and of \$586,627 (9% per cent.) in net earnings. The increase in net earnings is equal to something more than 7 per cent. on the preferred stock. There is some small increase in the fixed charges this year, however, and the increase will not all go into the surplus or stockholders' income.

The gross and net earnings and working expenses of this road for the eleven months of the fiscal year ending with August for four successive years have been.

	1877-78.	1878-79.	1879-80.	1880-81.
Earnings....	\$14,308,707	\$14,449,426	\$16,908,691	\$18,981,496
Expenses....	9,778,287	10,244,394	10,615,626	12,103,713
Net earn.	\$4,528,420	\$4,205,222	\$6,293,065	\$6,877,693

Compared with 1879 there is an increase of 31 per cent. in gross and of 64 per cent. in net earnings, and the amount of increase in the latter is \$2,672,471, which would pay the 6 per cent. preferred dividend and leave \$2,183,000, which is 2.8 per cent. on the common stock. The increase is mostly absorbed by the interest on the bonds, it is true, which was not paid in full in 1879; but the figures show very well the enormous improvement that has been effected in the profits of this company within two years.

There remains now but a single month of the fiscal year to be reported. This month the condition of through traffic was rather worse than in August, in that the through passengers were carried east as well as west at a fraction of the regular rate. This traffic, however, does not have a great effect on the earnings of the Erie. But the east-bound through freight was lighter in September than in August on the Erie (its deliveries of grain and flour at New York being 3,069,000 in September against 3,863,000 in August, and but 732,000 bushels more than last year, while they were 1,885,000 greater in August). Some decrease in gross and net earnings in September is quite probable, but it cannot much affect the results of the fiscal year, which is likely to yield about \$21,700,000 of gross and \$7,650,000 of net earnings, against \$18,700,000 and \$7,050,000 last year.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Burlington & Missouri River in Nebraska.—Track laid on the *Republican Valley Eastern Extension* from Nemaha City, Neb., west by south to Calvert, 12 miles.

Chesapeake & Ohio.—Track laid on the *Pennsylvania Extension* from Richmond, Va., east by south to Williamsburg, 48 miles.

Elizabeth City & Norfolk.—Extended southwest to Perquimans River, N. C., 11 miles.

Galeson, Harrisburg & San Antonio.—Track on the eastern end is extended from Dhanis, Tex., westward to Sabina Creek, 26 miles.

Goshen Furnace.—Completed from Goshen, Va., to Goshen Furnace, 1½ miles.

Massachusetts Central.—Extended from Hudson, Mass., westward to Oakland, 13 miles.

Nashville, Chattanooga & St. Louis.—Extended from Graham, Tenn., southwest to New Graham station, 4 miles. Gauge, 3 ft.

Richmond & Allegheny.—Track laid on the *Lexington Branch* from North River, Va., northward to Lexington, 10 miles.

This is a total of 119½ miles of new railroad, making 5,459 miles this year, against 4,275 miles reported at the corresponding time in 1880, 2,619 miles in 1879, 1,527 miles in 1878, 1,629 miles in 1877, 1,770 miles in 1876, 920 miles in 1875, 1,242 miles in 1874, 2,955 miles in 1873 and 5,312 miles in 1872.

RAILROAD COMPETITION IN RUSSIA we would hardly expect to present many resemblances to that of the trunk lines in this country; yet a leading railroad officer there finds great similarity between his roads and our trunk lines. A number of railroads in Russia extend from Baltic ports southwest to districts which produce great quantities of wheat and rye for export, and a large part of the traffic of these roads is grain carried to the Baltic or the German border for export, just as a large part of the trunk-line traffic is grain carried from the Northwest to the Atlantic. In this country the railroads have to meet the strong competition of the lakes and canal for this grain, which forces them to accept often the slightest margin above cost for this part of their traffic.

It is not generally known that the Russian railroads have

any such water competition to meet. But they have; for the navigable part of the Volga (which itself passes for hundreds of miles through grain-producing lands) is connected by a canal system with St. Petersburg, and this water route is open about seven months of the year. The cheap transportation by this route limits the rates on grain which the railroads from the grain-region northwest to the Baltic can obtain in summer. Their chief traffic is northwestward to the sea, and is mostly grain; the traffic in the other direction is not one-fourth of the whole, and here again are they like our trunk lines.

The common interest which these roads have in this competition with river and canal transportation it is, we believe, which has had much to do in causing these roads to form an organization, whose title is translated on its own letter-heads as the "Conference of II. Group of Russian Railways," which seems to make joint rates, regulations for interchange of traffic and the like.

In one point, however, the Russian railroads are very unlike our trunk lines; they do not compete with each other—at least not enough to affect their rates materially. They are usually so far apart as not to be much in each other's way. Probably the government would interfere if they reduced through rates below cost, as our roads often do, and with excellent reason; for the Russian government has substantially paid three-fourths of the cost of the Russian railroads, and to a large extent by guaranteeing dividends to lines which cannot earn them. As the government has to make up for any deficit in net earnings, it is of course interested in having such deficit as small as possible. Heretofore the government has not had much to do with rates, except through the establishment of maximum rates. The maximum rates for freight at low speed for the three Russian classes are 5½, 3½ and 2½ cents per ton per mile, respectively.

These maximum rates, however, are rarely applied, but rates, as elsewhere, are usually much more closely limited by circumstances than by law, and some coarse freight, like coal and salt, is taken at very little more than 1 cent per ton per mile, while the average rate is from 1.7 to 1.5 cents.

These roads are now taking great interest in docks and warehouses at termini, and methods of terminal handling, in which probably the Russian roads are most lacking.

THE WESTERN WEIGHING ASSOCIATION, which for more than a year has weighed all the cars received at Chicago by Western roads from Eastern roads, and billed them according to the actual weight of the loads, has proved a great success, and effort is now made to extend its operations to shipments on all the lines west of the trunk lines—that is, west of Suspension Bridge, Buffalo, Salamanca, Pittsburgh and Wheeling. At a meeting in Cleveland last week, Commissioner Midgley, of Chicago, reported the weights of some cars delivered to Western roads in May, June and July last, as billed by the Eastern roads, and as found by weighing and then billed by the Western roads. One lot of five car-loads was billed and charged by the Eastern road as 103,500 lbs. of freight; they weighed 128,000 lbs.; so the shipper had 24,500 lbs. carried for nothing, as far west as Chicago (and doubtless grumbled because he had to pay for it west of Chicago). Nine cars of agricultural implements were billed by the roads east of Chicago as containing 190,600 lbs. of freight, which put on the scales weighed 232,800 lbs., an underweight of 43,200 lbs., the bills being for \$10 when they should have been \$12.26. Five cars of agricultural implements, billed at 100,000 lbs., weighed 138,900 lbs. There have been several instances of a car-load billed at 20,000 lbs. which weighed 28,000, and one instance is given of a load of 30,500 lbs. billed also as 20,000. This is as if the butcher, when paid for 10 lbs. of meat, should send a joint weighing 15 lbs. without further charge. Butchers are not foolish enough to do such things; railroads are.

Aside from the great actual loss from these practices, we have the unjust discrimination and demoralization caused by allowing certain shippers to underbid their freights. One can imagine the advantage a wagon maker would have who should be permitted to send 25,000 lbs. of his manufactures at the price of 20,000, while a competitor was charged full rates. For of course these things are not done without the knowledge of the railroad authorities, nor is everybody permitted to do them. The practice is winked at and is usually a very substantial, but irregular and indefinite, rebate on the regular rate, and worse than a formal rebate because it is indefinite in amount and may endanger car and train by the temptation to overload.

There will be another meeting concerning the extension of the policy of weighing, in Chicago, next Tuesday, and it will argue great negligence of important interests if steps are not taken to enforce the collection of pay for all the freight that is carried, and insure knowledge of the loads that are put in cars.

THE CORN CROP in the tier of Western States from Ohio to Kansas inclusive, with those north of them (ten states) was reported by the Bureau of Agriculture as 1,180,952,000 in 1880, against 1,283,361,000 in 1879 as ascertained by the Census. This year the Bradstreet's Commercial Agency reports it to be 869,241,000 bushels. This is a decrease of 153,309,000 bushels from 1879 to 1880, and of 260,870,000 from 1880 to 1881, making the decrease in those ten states since 1879 no less than 414,179,000 bushels, or very nearly one-third. The decrease in Illinois alone is put at 74,184,000 bushels this year, but it had already been 85,340,000 from 1879 to 1880. Very little was said of the former decrease; the last one is much talked of and is without doubt a serious matter, coming as it does with a

failure of the wheat crop, while last year the wheat crop was the best ever known. With this decrease of 74,000,000 bushels (31 per cent.) in Illinois this year, there is one of 68,300,000 (26½ per cent.) in Iowa, one of 45,700,000 (38 per cent.) in Ohio, one of 35,200,000 (22 per cent.) in Missouri, one of 32,300,000 (30 per cent.) in Kansas and one of 23,300,000 (23½ per cent.) in Indiana. The decrease is thus largest in proportion in Ohio. A small gain (3,500,000 bushels) is reported in Wisconsin, a still smaller one in Minnesota, and a larger one (22,200,000 bushels and 37½ per cent.) in Nebraska. The decrease in production here reported in the Western States alone is more than twice our exports last year, and the decrease reported from 1879 to 1881 is nearly three times our last year's exports. The effect of the light crop will not be much felt directly until next January. It has been felt indirectly, however, ever since it was known that the crop would be light, as farmers have had to save old corn to feed next winter, which otherwise they would have marketed. On the other hand, the extraordinarily high prices this fall have tended to bring to market every bushel the farmers could possibly spare.

BUFFALO GRAIN SHIPMENTS for the second week of October were smaller than in any previous week of this year, and those for the first two weeks of the month are very much smaller than in any other fortnight, the decrease being greatest in the canal shipments, though the rail shipments also are exceptionally small. In the first week the canal shipments were but one-third as great and in the second but one-seventh as great as in the corresponding week of last year. It was at this time last year that the grain movement was heaviest, while now it is lighter than at almost any time since navigation opened.

The average weekly shipments for the four weeks from the opening of canal navigation till the low rail rate was made, June 17, and for the 17 weeks from June 17 to Oct. 14, and also the actual shipments for the week ending Oct. 14 were, in bushels:

	1881.			1880.		
	By canal.	By rail.	P.c. by rail.	By canal.	By rail.	P.c. by rail.
Av. to June 17...	1,673,685	1,159,400	41.0	2,671,689	1,280,289	32.4
June 17...	1,097,704	1,715,952	61.0	2,347,258	1,512,444	39.2
Week to Oct. 14...	420,500	1,160,500	73.4	3,185,825	1,115,300	26.0

We see that the average weekly canal shipments since June 17 have been 576,000 bushels (34.3 per cent.) less than before that date, while the average weekly rail shipments have been 48 per cent. greater; compared with last year, the canal shipments since June 17 have been 53 per cent. less; the rail shipments 13½ per cent. greater, there having been a decrease from 3,859,702 to 2,813,656 bushels, or 27 per cent. in the total.

The rates were not so low in this last week of smallest canal shipments as they have been in several previous weeks of the season, but they are evidently unsatisfactory, and seem likely to result in the laying-up of many boats long before the canal closes.

WATER RATES have changed as follows during the week ending with Wednesday last. Lake rates, which jumped up from about ½ cent to 3 cents a bushel on corn from Chicago to Buffalo, on the breaking of the corner that had prevented shipments, yielded very soon after, and during most of the last week have not been more than 2½ cents, and recently 2¼ cents, the rate on wheat (which is hardly shipped by lake at all from Chicago now, but is from Milwaukee) being 2½. These rates are so unsatisfactory at this season that it is again reported that many vessels are likely to lie up for the winter now, instead of waiting six weeks longer till the lakes close. The rates on coal from Buffalo to Chicago continue very high—\$1.40 to \$1.50 a ton—but there is said to be less pressure of shipments than there had been.

At this time last year the vessels were getting 7 cents a bushel for corn to Buffalo.

Canal rates have been quite steady at 5 cents a bushel for corn and 5½ for wheat from Buffalo to New York. The shipments are very small, though these rates are so much higher than canal rates have been this season that the boats, one might think, would either take large quantities or bring down the rates. Last year at this time the canal boats were getting 6½ cents for corn and 7 for wheat, and carrying immense quantities. The rates by water now from Chicago to New York are higher than the rail rates.

Ocean rates have fluctuated between 3d and 3½d. per bushel for grain by steam from New York to Liverpool, and closed at 3d. A year ago 6d. was the rate.

THE BALTIMORE & OHIO belongs to one port much more than any of the other trunk lines. Nearly all the freight it brings from the West is delivered at Baltimore. Only a few years ago the Erie was almost exclusively a New York road, but recently it has improved its connections both with Boston and Philadelphia, and at times it has delivered considerable amounts at the latter place—at one time, it was said, more than the Pennsylvania even. The Pennsylvania is the most cosmopolitan of all, as we should expect it to be, as it alone has direct lines of its own to New York, Philadelphia and Baltimore. It has usually brought more through freight to Philadelphia than to New York; but this year the appearances are that New York will get the most. The Pennsylvania carries to Baltimore an immense amount of freight—not so very much less than the contributions of the Baltimore & Ohio, which is popularly supposed to make the trade of Baltimore. The New York Central is generally reckoned a New York and New England road, and it is so pre-eminently;

but it too a few years ago made connections and opened offices in Baltimore as well as in Philadelphia, and the amounts it obtained at one time were very considerable at both places, though much less than its New York or even its New England business, which latter, by the way, is not nearly so large as its New York business—not half so large it is safe to say.

WHEAT PRODUCTION in ten Western states is reported by *Bradstreet's* this year to have been 248,137,000 bushels against 343,570,000 in 1880 and 338,054,000 in 1879—a decrease of 95,433,000 bushels, or 27½ per cent. An increase of 2,786,000 bushels (23 per cent.) is reported in Nebraska, and of 3,500,000 bushels (22 per cent.) in Wisconsin (which is contradicted by other authorities), also a trifling increase in Kansas (contrary to other reports), and everywhere else a decrease, amounting to nearly 32,000,000 bushels (56 per cent.) in Illinois; 13,600,000 (38 per cent.) in Indiana; 14,700,000 (44 per cent.) in Michigan; 12,600,000 (23 per cent.) in Ohio; 9,800,000 (28 per cent.) in Iowa; 9,100,000 (32½ per cent.) in Missouri, and about 8,000,000 bushels (19 per cent.) in Minnesota. About 78,000,000 bushels of the whole decrease of 95,400,000 is in the four winter wheat states east of the Mississippi. The states directly west of Lake Michigan seem to have suffered much less than the average. Wisconsin, Minnesota, Iowa and Nebraska together produced 92,325,060 bushels of wheat this year, against 104,150,000 last year, a decrease of but 11½ per cent. In these states also the corn crop seems to have suffered least, they producing 328,075,000 bushels this year, against 368,944,000 last year, a decrease of 40,870,000 bushels (15 per cent.) out of a total decrease of 260,000,000 bushels, or 23 per cent., in the eleven corn-growing Western states.

CHICAGO RAIL SHIPMENTS EASTWARD for the week ending Oct. 8 were 60,578 tons, against 52,059 the week before, and 38,643 tons in the corresponding week of last year—the increase over last year being 56 per cent. In the week ending Oct. 8 this year 9 per cent. of the shipments were by the Chicago & Grand Trunk, 26.8 by the Michigan Central, 27.8 by the Lake Shore, 18.8 by the Fort Wayne, 13 by the Pittsburgh, Cincinnati & St. Louis, and 4.6 per cent. by the Baltimore & Ohio. These differ considerably from the percentages copied last week from the Board of Trade statement, giving more to the Michigan Central and the Fort Wayne, and less to the other roads. The two Vanderbilt roads had 54.6 per cent. of the total, against 49 awarded in the pool, and the two Pennsylvania roads had 31.8 per cent., against 33 in the pool.

CHICAGO LUMBER SHIPMENTS fell off last September, when they usually increase; still they were as large as in September last year, and the change is due to an extraordinarily heavy July and August business. For the nine months ending with September the Chicago receipts were 20 per cent. and the Chicago sales of lumber 22½ per cent. more than last year, when they were much larger than ever before. The bad harvests are likely to lessen the demand for lumber, but nevertheless it is still large, and as the September business was done with the full knowledge of the lighter crops, it may be looked upon as evidence that the country is in condition to make large purchases, though doubtless considerably less than would have been the case if the crops had been good.

THE AMERICAN INSTITUTE OF MINING ENGINEERS will hold its autumn meeting at Harrisburg, Pa., beginning Oct. 25. Among the papers presented for that meeting is one by Magnus Troilius, of London, on "Chemical Methods for Analyzing Rail Steel," preceded by an introduction by C. P. Sandberg.

Among recent publications of the Institute are the above paper, and the "Discussion on Steel Rails" held at the Virginia meeting last May.

MISSISSIPPI RIVER GRAIN SHIPMENTS continue very light, as they have been since the railroad war broke out. The average from the opening of lake navigation till then was 475,408 bushels. In July the weekly average fell to 235,000 bushels, in August 111,000, and since August it has been but 68,560 bushels. In the last eight weeks the river shipments have not been so much as in a single week in June.

A Railroad Nuisance.

There are many different kinds of tormentors to which travelers in American railway cars are delivered up. Not to mention the conductor who wakes the traveler on the sleeping car in the middle of the night to demand his ticket, the brakeman who slams the door and yells as if he had milk for sale, and the peripatetic news, candy, and pea-nut boy, there are various kinds of traveling tormentors who have apparently no connection with the railway companies. Opinions may differ as to whether the man who chews tobacco, the man who whistles, or the man who eats peanuts is the worst offender, but it will be unanimously agreed by all intelligent sufferers that the man who reads a newspaper aloud is decidedly the most maddening of all traveling tormentors.

The wretch in question is of uncertain age. Sometimes he is a young man and reads accounts of prize fights and murder trials to an accomplice of few years and no understanding whatever; sometimes he is middle-aged and reads political speeches to a companion who shares his political views and his lack of decency, and sometimes he is an old man who reads the whole newspaper, with the exception of the advertisements, and relies on his gray hairs to save him from the vengeance of the public. Reading aloud in a railway car is, like falsehood or theft, the crime of no particular age, and any person who can read words of three syllables and is devoid of moral sense may become addicted to it. It is a curious fact that the average criminal of this detestable class can seldom read with any fluency. He always stumbles over long words, and as to many simple and com-

mon words his idea of pronunciation are extremely vague. He always calls the "theatre" the "theayter," and is morally certain to pronounce "national" as if it were "naytional." Of course, he is utterly shameless, or he would never attempt to read aloud in the presence of fifty or sixty inoffensive people, but it is really wonderful that he should be willing to make the exhibition of his ignorance of the English language which he habitually makes.

In the rare cases where he does not know how to read with comparative ease, the effect upon his helpless listeners is rather worse than it would be were he to stumble at every other line. His accomplice is sure to be unable to understand rapid reading, and always requests the reader to "just read that over again, won't you?" As between a man who reads badly and a man who reads well, but repeats the offense indefinitely, there is little to choose; but, inasmuch as the sufferer can partially relieve his mind by despising the ignorance of the former variety of wretch, he is perhaps a trifle less offensive than the latter.

The most disgusting features of this crime of reading aloud on the railway is the fact that it prevents anybody else from reading. The ordinary male traveler likes to read his newspaper on the morning train, but it is impossible for him to read while within a few feet of him another man is reading aloud. In vain does the sufferer try to fix his mind on a pleasing snake anecdote in the *Sun*, or an account of a polo-match in the *Herald*. The droning wretch just behind him insists upon struggling through an entire leading article in the *Tribune*—which paper, curiously enough, is the favorite sheet of such malefactors—and the sufferer is compelled to listen. It is useless to turn around and look severely at the offender. Either the latter is wholly absorbed in contemplating current events as seen through Ohio spectacles, or else he accepts the indignant looks cast upon him as so many tributes to the surpassing interest of his performance. He reads serenely on until the journey is ended, and he then folds up his *Tribune* with the air of a man who is a public benefactor.

It is difficult to know what to do with a nuisance of this kind. In Europe when a man begins to read a newspaper in a railway carriage his fellow travelers usually kill him and throw his body out of the carriage window, and as the compartment of a railway carriage never holds more than eight persons, the number of avengers is so small that they can be trusted to keep the secret of the criminal's disappearance. Our saloon cars, however, are so large that summary justice could not be meted out to an offender with any safety since there would certainly be some one of the 50 or 60 occupants of the car who would be mean enough to give information to the police. Probably the only way in which the nuisance could be legally and effectively suppressed would be a simultaneous reading aloud of 50 newspapers by 50 aggrieved and determined men. If there resides in the soul of the man who affronts humanity by reading the *Tribune* aloud in public any remnant of shame, he would surely be reduced to silence by such a concerted expression of public indignation. This method deserves to be thoroughly tried, and should it prove ineffectual it will then be time enough to gag the offender and to remove him, bound hand and foot, to the baggage car, where the baggage-master could be bribed to drop heavy trunks on him and to upset cans of kerosene over his clothes.—*New York Times*.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:
Massachusetts Central, annual meeting, at the office in Boston, Oct. 26.
Baltimore & Ohio, annual meeting, at Camden Station, Baltimore, Nov. 21, at 10 a. m. Transfer books will close Nov. 10.

Railroad Conventions.

The *American Institute of Mining Engineers* will hold its autumn meeting in Harrisburg, Pa., beginning Oct. 25.
The *Southern Railway & Steamship Association* will hold its annual convention in Washington, Oct. 26.
The *International Road-Masters' Association* will hold its adjourned convention in Cleveland, O., Nov. 16.

Dividends.

Dividends have been declared as follows:
Oregon Railway & Navigation Co., 2 per cent., quarterly, payable Nov. 1. Transfer books close Oct. 20.
St. Louis, Jacksonville & Chicago (leased to Chicago & Alton), 3½ per cent., semi-annual, payable Nov. 1.

Southern Time Convention.

This convention met in New York, Oct. 14, Mr. R. R. Bridges in the chair.
A committee on time card was appointed and reported in favor of continuing the present schedule, except that the evening Southern express leave New York an hour earlier (9 p. m.) and arrive in Washington at 6 a. m.
New York was chosen as the place for the spring meeting. The convention then adjourned.

General Time Convention.

At the meeting of this convention in New York, Oct. 13, there was a full attendance. Mr. John Reilly stated on behalf of the Pennsylvania Railroad Company that, in view of the present condition of rates, that company would not bind itself to adopt the schedule presented by the convention.

Thereupon it was resolved to make no changes in the present schedule.

A rule was adopted that special meetings of the convention may be called by the Chairman at the request of the managers of any one of the trunk lines.

A number of communications on the subject of uniform time were referred to a committee. Cleveland was chosen as the place for the next meeting.

American Society of Mechanical Engineers.

The Secretary informs us that arrangements have been completed for the November meeting in New York. The meeting will be held in the theatre of the Turf Club, Madison avenue and Twenty-sixth street, the audience room and headquarters being adjoining rooms. The dinner will be at Delmonico's, Broadway and Twenty-sixth street, at 7 p. m. on Friday, Nov. 4. The attendance of ladies is requested at the meetings and at the dinner; at the latter distinguished guests are expected. The price of dinner tickets will be \$8. No regular excursions have been arranged for, but a list of places of interest which members of the Society are invited to visit will be found at headquarters.

In view of the prevailing low passenger fares it has been deemed unnecessary to apply to the railroads for special rates for members.

Western Railway Weighing Association.

The meeting called for the purpose of extending the operations of this Association was held in Cleveland, O., Oct. 12, about 25 roads being represented.

The meeting was altogether informal and no decisive ac-

tion was taken. R. M. Fraser was placed in the chair and W. A. Carpenter acted as Secretary. Commissioner Midgley presented the plans adopted and rules in force by the Southwestern Rate Association, which embraces the Chicago & Alton, Chicago, Burlington & Quincy, Wabash, Hannibal & St. Joseph, and Chicago, Rock Island & Pacific. The plan is to weigh all freight and make the weight the basis for freight charges, instead of making charges by the car-load or bulk. He claimed that, with the plans of the association in force, the weighing could be done at a cost of 2½ cents per car and for this expense a great saving could be made for the railway companies, and a system put in operation that would prevent many frauds now practiced. Besides this, it is claimed that the Association will in this way be better able to govern rates, and prevent misunderstandings that sometimes lead to war. Mr. Midgley urged that the plan be adopted by roads west of Suspension Bridge, Buffalo and Pittsburgh.

A full discussion of the scheme followed, which was participated in by nearly all the gentlemen present, and seemed to be received with much favor. No definite action was taken, however, but it was moved and adopted that the rules and regulations governing the matter now in force by the roads west of Chicago should be printed and distributed to the proper officers of all roads west of the Suspension Bridge, Buffalo and Pittsburgh for their consideration. The meeting adjourned to Oct. 25, when another session will be had at Chicago, when some definite action may be taken.

Brotherhood of Locomotive Engineers.

The annual meeting of the Brotherhood began in Baltimore, Oct. 19, with a full attendance of delegates from the United States and Canada, several hundred being present. P. M. Arthur, Grand Chief Engineer, presided. Acting Mayor Veazey, in the absence of Mayor Latrobe, at Yorktown, delivered an address of welcome. Grand Chief Engineer Arthur read his annual address. After reviewing the history of the past year and the progress which the order had made in that time, Mr. Arthur stated that 13 subdivisions had been formed since the last meeting, viz.: Connellville, Pa.; Stanberry, Mo.; Rawlins, Wyoming; South Pueblo, Col.; Staunton, Va.; Greensboro, N. C.; Tucson, Arizona; Fergus Falls, Minn.; Oneonta, N. Y.; Battle Creek, Mich.; Winnipeg, Manitoba; Stevens Point, Wis.; and Brookfield, Mo. No. 169, at Syracuse, and No. 156, at Birmingham, Ala., have been reorganized. On Sept. 30, 1880, the order numbered 2,203 members, and on Sept. 30, 1881, there were 2,654 members. Thirty-four claims had been paid, involving an expenditure of \$77,814.78, making a total since the organization of \$1,178,888.33. Mr. Arthur took strong ground against the laws passed in some of the states in regard to color blindness, claiming that railway companies were abundantly able to judge of the qualifications of their employees, and that no man would risk his own life for a situation if he could not tell red from white. The address was listened to with great attention and frequently applauded.

The business meetings will be held with closed doors. The convention will, it is expected, continue in session about a week.

ELECTIONS AND APPOINTMENTS.

Atchison, Topeka & Santa Fe.—Mr. M. Lippincott has been appointed Southern Traveling Agent, with headquarters in Atlanta, Ga., in place of D. McDonald, resigned. Mr. Lippincott was recently Agent for the Cincinnati Southern in Atlanta.

Mr. C. M. Rathbun is appointed Superintendent of the Eastern Division, with office in Topeka, Kan. He was formerly on the Chicago, Burlington & Quincy.

Baltimore & Ohio.—At the meeting of the board last week, the appointment of Mr. F. Harriott as General Freight Agent in place of Mr. Milton H. Smith (heretofore noted) was confirmed.

Mr. Charles E. Ways, formerly Division Freight Agent, was appointed Assistant General Freight Agent for the Main Stem and branches and the Pittsburgh Division.

Mr. John Bradshaw was appointed Superintendent of Construction and Repairs, a new office. Mr. Bradshaw was formerly Master of Road, and resigned some time ago on account of ill-health.

Buffalo, New York & Philadelphia.—Mr. Wm. S. Baldwin has been appointed General Passenger Agent in place of Mr. F. S. Buell, who continues with the company as Secretary and Treasurer. Mr. Baldwin also retains his position as General Passenger Agent of the Buffalo, Pittsburgh & Western road. His office is at No. 41 Exchange street, Buffalo, N. Y.

Canada Southern.—Mr. Milton C. Roach, late Western Agent, has been appointed General Northern and Southern Passenger Agent, with office in Detroit.

Detroit, Mackinac & Marquette.—Mr. Sidney B. Floeter has been appointed Chief Train Dispatcher, with office at Marquette, Mich. He was recently station agent for the Canada Southern at Amherstburg.

East St. Louis & Carondelet.—Mr. Joseph Hill has been appointed Superintendent. He is also General Superintendent of the Vandalia line.

Georgia Railroad Commission.—The Governor of Georgia has appointed Col. L. N. Trammell Railroad Commissioner in place of Samuel Barnett, whose term expired Oct. 16.

Gulf, Colorado & Santa Fe.—At the annual meeting in Galveston, Tex., recently, the following directors were chosen: R. S. Willis, W. S. Davis, George Sealy, John Sealy, Henry Rosenberg, J. E. Wallis, H. Kempner, W. L. Moody, Leon Blum, John D. Rogers, M. Kopperl, Walter Gresham, Samson Heidenheimer.

Indiana, Bloomington & Western.—Mr. C. E. Henderson is appointed General Manager of the consolidated lines of this company, with headquarters at Indianapolis. Mr. Henderson has been Assistant General Manager. He succeeds Mr. B. S. Henning, now Vice-President.

Indianapolis, Decatur & Springfield.—At the annual meeting in Indianapolis, Oct. 13, the following directors, one-fourth of the board, were chosen: John W. Bunn, Joseph B. Fordyce, E. H. Lamme. The board re-elected H. B. Hammond President; A. Duprat, Secretary; John R. Elder, Treasurer.

Intercolonial.—Mr. Arthur Busby has been appointed General Passenger and Ticket Agent, with office at Moncton, N. B. Mr. George Taylor, heretofore General Freight and Passenger Agent, is now General Freight Agent.

Mr. James E. Price is appointed Superintendent of the Moncton District (Moncton to St. Flavie), with office at Moncton, N. B. Mr. M. McDonald is appointed Superintendent of the Levis District (St. Flavie to Point Levis), with office at Rivière du Loup, P. Q.

Lake Erie & Western.—At the annual meeting in La Fayette, Ind., Oct. 12, the four directors whose terms then expired were re-elected, as follows: Daniel P. Eels, Charles Foster, E. H. R. Lyman, Alexander M. White.

Lake George & Champlain.—The officers of this new company are: President, W. E. Calkins; Vice-President, B. W. Burleigh; Secretary, D. C. Bascom; Treasurer, Wm. Hooper.

Maine Central.—Master Mechanic J. W. Philbrick having resigned, Mr. Ira K. Russell has been appointed Foreman of Machinery, and Mr. Charles H. Kenison Foreman of Car Repairs, with offices at Waterville, Me.

Marquette, Houghton & Ontonagon.—Mr. Wm. H. Williams has been appointed Master Mechanic.

New Brunswick.—At the annual meeting in Gibson, N. B., last week, the following directors were chosen: E. R. Burpee, Fredericton, N. B.; Isaac Burpee, St. John, N. B.; George W. Campbell, T. W. Ritchie, D. A. Smith, George Stephen, Montreal; J. S. Kennedy, Samuel Thorne, J. Kennedy, New York; Lord Elphinstone, England. The board elected Samuel Thorne President; Isaac Burpee, Vice-President.

New York Elevated.—Mr. George S. Scott has been chosen a director and Vice-President of the company.

Nittany Valley.—The officers of this new company are: President, Robert Valentine, Bellefonte, Pa.; Secretary and Treasurer, Harry C. Valentine, Bellefonte, Pa.; Chief Engineer, Wm. J. Nicolls, Snow Shoe, Pa.; Solicitor, Adam Hay.

Northern Pacific.—Mr. B. McHugh is appointed Superintendent of the Minnesota Division, in place of Horace A. Towne, resigned.

Ohio & Mississippi.—At the annual meeting in Cincinnati, Oct. 13, the following directors, one-third of the board, were chosen: F. Jansen, Louisville, Ky.; J. L. Donaldson, T. H. Garrett, Baltimore; Henry Pearson, London, England. These directors received 153,552 votes to 130,914 for the opposition or Gould candidates, who were Sidney Dillon, Jay Gould, Solon Humphreys and Russell Sage.

The board elected Wm. McClintock President; W. M. Walton, Secretary; C. S. Cone, Treasurer; A. Donaldson, Auditor and Assistant Secretary.

Mr. H. M. Hall has been appointed Superintendent of Bridges and Buildings, in place of E. T. Duval, deceased.

Peoria & Pekin Union.—Mr. W. W. Wells has been appointed Chief Train Dispatcher of this company in place of J. C. Hankinson, resigned.

Profile & Franconia Notch.—At the annual meeting recently the following directors were chosen: Joseph A. Dodge, Plymouth, N. H.; Walter Aiken, Franklin, N. H.; John H. George, John A. White, Concord, N. H.; Samuel N. Bell, Manchester, N. H.; Edward Spaulding, Nashua, N. H.; Isaac Croft, Emmons Raymond, Boston.

Savannah, Florida & Western.—The following circular from General Manager H. S. Haines is dated Savannah, Oct. 11:

"1. R. G. Fleming is hereby appointed Superintendent, appointment to take effect on 15th inst.

"2. The Superintendent will have charge of all matters pertaining to the maintenance, operation and traffic of the road."

Mr. Fleming has been for some time General Superintendent of the Port Royal & Augusta road.

Selma & Greensboro.—Mr. E. J. Fallon, of Chattanooga, Tenn., is appointed General Manager.

Texas & Pacific.—Mr. J. T. Brown has been appointed Stock and Damage Agent, with office in Marshall, Tex.

Mr. E. A. Garvey has been appointed Resident Engineer and Master of Bridges and Buildings, with headquarters in Marshall.

Valley of Virginia.—Mr. Samuel Spencer has been chosen President, in place of Wm. Keyser, resigned. Mr. Spencer is also Third Vice-President of the Baltimore & Ohio.

Wallkill Valley.—Mr. G. H. Graves has been appointed Superintendent, with office at Rondout, N. Y., in place of J. H. Jones, resigned.

Wolboro.—This company has elected directors as follows: J. L. Avery, W. B. Bacon, J. M. Brackett, Frank Jones, E. B. Phillips, W. P. Phillips, J. W. Sanborn. The road is leased to the Eastern Railroad Company.

PERSONAL.

—Mr. Horace A. Towne has resigned his position as Superintendent of the Minnesota Division of the Northern Pacific.

—Mr. M. N. Forney returned from his trip to Europe on the steamer "Gallia," which arrived in New York on Tuesday, Oct. 17.

—Mr. John A. Read, Auditor of the Bradford, Bordell & Kinzua road, has resigned, to accept a position with the Brush Electric Light Company, of Buffalo.

—Mr. James H. Jones has resigned his position as Superintendent of the Wallkill Valley road, which he has managed since June 1, 1873. Mr. Jones remains General Superintendent of the Rhinebeck & Connecticut road.

—Mr. Wm. Kendrick, one of the oldest coal operators in the Pennsylvania anthracite region, died of paralysis at Shamokin, Pa., Oct. 17. For several years he was General Superintendent of the Philadelphia & Reading Company's collieries.

—Mr. Franklin S. Buell, Secretary and Treasurer of the Buffalo, New York & Philadelphia Company, was married in Buffalo, Oct. 20, to Miss Minnie C. Earnforth, of that city. Mr. Buell has recently been relieved from the duties of General Passenger Agent, in order that he may devote his whole time to the Treasurer's office.

—Hon. Elwin B. Morgan, for many years a prominent man in Central New York, died at his residence in Aurora, N. Y., Oct. 13, aged 75 years. Mr. Morgan was one of the founders of Wells, Fargo & Co., a director of the United States Express Company and at the time a director of the Cayuga Lake Railroad Company. He represented his district in Congress from 1853 to 1859. He was a man of large wealth, and gave very liberally for religious and educational purposes.

—Mr. John W. Philbrick, who recently resigned his position as Master Mechanic of the Maine Central road, began work on that road as an engineer Dec. 14, 1849, and was made Master Mechanic Sept. 3, 1851, holding that position 30 years. In accepting Mr. Philbrick's resignation the board of directors passed unanimously the following order:

"Voted, In accepting the resignation of J. W. Philbrick, as Master Mechanic of this company, the directors record their

appreciation of the long-continued and faithful services that Mr. Philbrick has rendered this company, and their hope that with freedom from care and responsibility, he may have many years left of usefulness and happiness, as well as well-earned rest."

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

Nine months ending Sept. 30:				
	1881.	1880.	Inc. or Dec.	P.c.
Ala. Gt. So.	\$541,495	\$454,257	I.	\$87,238 19.2
Cairo & St. Louis	304,072	293,073	I.	10,999 3.8
Cleve., Mt. V. & D.	310,131	323,142	D.	13,011 4.0
Des. M. & Ft. D.	290,528	223,729	I.	66,800 29.8
Hou., E. & W. Tex.	106,539	73,186	I.	33,353 47.1
Lake Erie & W.	1,030,852	810,900	I.	219,952 27.1
Mem., Pad. & No.	173,340	149,341	I.	24,000 16.1
St. L., A. & T. H.				
Main Line	1,074,484	1,055,132	I.	19,352 1.8
Eight months ending Aug. 31:				
Br., C. Rap. & No.	\$1,380,490	\$1,285,940	I.	\$94,550 7.3
Net earnings	355,246	421,748	D.	66,502 21.3
Ches. & Ohio	1,784,075	1,756,382	I.	27,693 1.6
Net earnings	324,084	413,297	I.	100,357 23.0
Chi., Bur. & Quincy	13,160,180	13,267,569	D.	107,389 8.1
Net earnings	6,286,274	7,062,292	D.	776,018 10.7
Cleve., M. V. & Del.	289,018	281,295	D.	11,377 4.1
Net earnings	27,149	54,712	D.	27,563 50.4
Des. M. & Ft. D.	243,009	190,162	I.	52,847 27.8
Net earnings	79,200	def. 17,757		
Louise. & Nashv.	7,150,651	5,565,838	I.	1,584,813 29.5
Net earnings	2,582,957	2,200,377	I.	382,580 17.4
Mem., Pad. & No.	152,362	129,980	I.	22,382 17.2
Net earnings	29,225	17,110	I.	12,115 71.3
N. Y., L. E. & W.	13,557,368	12,278,912	I.	1,278,456 10.4
Net earnings	4,748,398	4,067,376	I.	81,022 1.7
St. L., I. M. & So.	4,513,227	3,617,010	I.	896,217 14.8
Net earnings	1,093,759	1,093,504	I.	255 0.02
Month of August:				
Central Iowa	\$115,419	\$80,079	I.	\$35,340 44.2
Net earnings	57,043	19,935	I.	37,108 188.6
N. Y., L. E. & W.	1,772,895	1,606,873	I.	166,022 10.3
Net earnings	677,371	649,187	I.	28,184 4.3
Month of September:				
Ala. Gt. Southern	\$70,704	\$62,187	I.	\$8,517 13.7
Atch., T. & S. F.	1,147,000	806,730	I.	340,270 42.1
Cairo & St. L.	38,232	38,350	D.	118 0.3
Central Iowa	101,068	88,551	I.	12,517 14.1
C. Mt. Ver. & Del.	40,213	41,847	D.	1,634 3.9
Des. M. & Ft. D.	47,519	33,564	I.	13,955 41.0
Green Bay & Minn.	34,783	33,579	I.	1,204 3.5
Hou., E. & W. T.	15,078	9,205	I.	5,873 63.9
Lake Erie & W.	126,719	109,853	I.	16,866 13.3
Mem., Pad. & N.	20,984	19,361	I.	1,623 8.5
St. L., A. & T. H.				
Main Line	121,769	136,706	D.	14,937 10.9
Tol., Del. & Bur.	57,156	28,186	I.	28,970 103.4
First Week in October:				
Chi. & Alton	\$170,360	\$192,279	D.	\$15,919 8.3
Chi. & Eastern Ill.	41,779	33,275	I.	8,504 20.8
Louise. & Nashv.	228,900	228,900	I.	0 0.0
Mo., Kan. & Tex.	119,709	89,275	I.	30,434 24.2
Mo. Pacific	171,674	145,577	I.	26,097 17.9
St. L., I. M. & So.	186,092	171,060	I.	15,032 8.8
St. P., Minn. & Ma.	118,000	81,000	I.	37,000 45.7
Wab., St. L. & P.	328,288	317,774	I.	10,514 3.3
Second week in October:				
Denver & R. G.	\$142,447	\$101,973	I.	\$40,474 39.7
Week ending Oct. 1:				
Grand Trunk	\$43,834	\$46,573	D.	\$2,739 5.8
Week ending Oct. 7:				
Great Western	\$105,373	\$123,343	D.	\$17,970 14.6
Week ending Oct. 14:				
Chi. & Gd. Trunk	\$34,962	\$34,531	I.	\$431 1.2

Grain Movement.

For the week ending Oct. 8 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Northwestern		Northwestern shipments		Atlantic	
Year.	receipts.	Total.	By rail.	P.c. by rail.	receipts.
1874	4,006,901	3,590,822	422,641	11.6	3,154,393
1875	4,989,513	3,199,015	1,148,256	28.0	3,817,658
1876	6,164,185	4,307,730	1,835,691	42.1	3,718,853
1877	5,519,469	3,380,512	1,030,797	19.1	5,742,997
1878	5,093,208	3,089,892	1,245,545	24.5	7,343,525
1879	7,671,299	6,841,969	1,817,672	26.6	7,804,596
1880	9,214,924	6,693,430	1,772,487	26.5	6,158,528
1881	6,058,767	3,249,565	1,096,000	61.4	4,467,400

Thus the receipts of the Northwestern markets in this week this year were a third less than last year and a fifth less than in 1879; the shipments of those markets were the smallest for eight years and not half as great as last year and the year before; and the receipts of the Atlantic ports a quarter less than last year and the smallest for five years.

Comparing with previous weeks of this year, the Northwestern receipts are a trifle larger than for two weeks previous, the Northwestern shipments a little smaller even than those of the previous week and the smallest since April 9 (2,315,000 bushels, or 41 per cent., less than the average in four September weeks), while the Atlantic receipts are 706,000 bushels less than the week before and are the smallest since the middle of May.

Of the Northwestern receipts for the week, Chicago had 58.3 per cent., Peoria 8.8, St. Louis 8.7, Milwaukee 7.9, Toledo 5.6, Duluth 5.5, Detroit 3.7 and Cleveland 1.5 per cent. The St. Louis receipts, with one exception, are the smallest since the Mississippi River opened last February, and little more than half the average in September; the Duluth receipts are much the largest of the year.

Of the Atlantic receipts New York had 65.4 per cent., Boston 10.8, Baltimore 10.1, Philadelphia 7.4, Montreal 5.1, New Orleans 0.9 and Portland 0.3 per cent.; New York and Boston keep up their receipts very well, in spite of the smaller total receipts, but Montreal, Philadelphia and Baltimore all have very small receipts—Montreal the smallest since July, and with one exception the smallest since navigation opened; Philadelphia the smallest since June and only three-fifths of its average this year; Baltimore more than the week before, but with that and one other exception the smallest since January, and less than half its average since May.

Exports from Atlantic ports for four successive weeks have been:

		Week ending.			
1881.	Oct. 12.	Oct. 5.	Sept. 28.	Sept. 21.	Sept. 14.
Flour, bbls.	53,759	61,429	75,993	53,971	58,108
Grain, bu.	2,451,884	2,488,195	2,942,329	3,190,029	2,569,633
1880:					
Flour, bbls.	120,074	64,346	100,069	97,970	77,582
Grain, bu.	3,857,439	5,760,784	4,773,358	5,114,389	5,348,597

The grain exports for the five weeks have been but about half as much this year as last.

Receipts and shipments at Chicago and Milwaukee for the week ending Oct. 14 have been:

		Receipts.		Shipments.	
		1881.	1880.	1881.	1880.
Chicago		3,321,544	4,790,082	2,950,618	3,720,705
Milwaukee		508,328	773,527	306,793	396,469
Both		3,829,872	5,563,609	3,257,411	4,117,174

There has thus been a decrease of 1,734,000 bushels (81 per cent.) in the receipts and of 940,000 bushels (33 per

cent.) in the shipments of the Lake Michigan markets, and this after the breaking of the corner, which had checked shipments, but doubtless increased receipts.

Receipts and shipments at Buffalo for the week ending Oct. 14 have been:

	Receipts.	Shipments.
By water.....	1881. 858,100 1880. 3,492,100	1881. 420,500 1880. 3,185,825
By rail.....	539,400 587,300	1,160,500 1,115,300
Total.....	1,397,500 4,079,400	1,581,000 4,301,125

The rail receipts and shipments are both nearly the same as last year, but the lake receipts are but one fourth, and the canal shipments not one seventh as great.

Receipts at four Eastern ports for the week ending Oct. 14 have been:

	New York.	Boston.	Phila.	Baltimore.	Total.
1881.....	1,818,087	577,025	206,000	550,011	3,111,123
P. c. of total.	56.0	18.0	6.3	17.1	100.0
1880.....	2,970,008	459,539	707,200	709,283	4,846,030
P. c. of total.	60.2	9.3	14.1	14.4	100.0

The total receipts are exceptionally small, but mostly at New York and Philadelphia, whose weekly averages in September were 2,040,000 and 588,000 bushels respectively. Boston, on the other hand, has not had so large receipts before since the first week in July, and but in three other weeks of the year (in June) has it had larger receipts. Baltimore, though far below its average, had larger receipts than in any of the three preceding weeks.

Coal Movement.

Coal tonnages for the week ending Oct. 8 are as follows:

	1881.	1880.	Increase.	P. c.
Anthracite.....	641,254	326,860	314,454	96.2
Semi-bituminous.....	105,436	93,749	11,687	12.5
Bituminous, Penna.....	59,245	42,739	16,506	38.7
Coke, Penna.....	45,518			

The anthracite trade is very steady, and the demand continues so large that there is delay in filling orders.

Cumberland producers have been embarrassed by scarcity of cars on the railroad and low water in the Chesapeake & Ohio Canal: these causes have limited shipments.

Coal shipments from the mines at Rich Hill, Mo., in September were 898 car-loads by the Kansas City, Ft. Scott & Gulf, and 1,087 car-loads by the Missouri Pacific; 1,985 car-loads in all.

The official accountant's statement of anthracite tonnage for September and the nine months, differing somewhat in form from the weekly statements, is as follows:

	September.		Nine months.	
	1881.	1880.	1881.	1880.
Phila. & Reading....	665,866	769,552	4,938,352	4,264,433
Lehigh Valley.....	504,739	497,865	4,025,783	3,117,412
Central, of New Jersey.....	360,608	457,633	2,938,125	2,477,683
Delaware, Lacka. & Western.....	380,013	411,672	3,128,327	2,530,401
Del. & Hudson Canal Co.....	292,373	306,499	2,300,055	1,915,396
Pennsylvania R. R. Co.....	196,698	208,061	1,637,284	1,308,084
Pennsylvania Coal Co.....	144,628	157,363	1,037,621	788,372
N. Y., Lake Erie & Western.....	43,204	33,833	355,816	285,188
Total.....	2,588,219	2,842,478	20,361,363	16,686,906

Decrease for the month, 254,259 tons, or 8.9 per cent.; increase for the nine months, 3,674,454 tons, or 22.0 per cent. For the month only the Lehigh Valley and the New York, Lake Erie & Western show a gain; for the nine months all the companies show large increases.

The stock of anthracite coal on hand at tide-water shipping points, Sept. 30, was 613,958 tons, against 652,943 tons Aug. 31, a decrease of 38,985 tons, or 6.0 per cent., during the month.

Coal shipments over the Seattle & Walla Walla road and by sea from Seattle, Wash. Ter., in September were 11,070 tons. For the nine months ending Sept. 30 they were: 1881, 106,400; 1880, 98,262; increase, 8,138 tons, or 8.3 per cent. This does not include a considerable quantity brought to Seattle and sold for local consumption and for use of steamers on Puget Sound.

Traffic of New York Canals.

The traffic of the New York canals for the first week in October is reported as follows:

	1881.	1880.	Decrease.	P. c.
Tons cleared.....	150,660	205,859	55,199	27.0
Miles cleared by boats.....	192,605	359,390	166,785	46.3
Tolls.....	\$18,068	\$35,269	\$17,201	48.8

This traffic is, we believe, smaller than has been reported before.

The number of tons shipped in the week of leading classes of freight were:

	1881.	1880.	Inc. or Dec.	P. c.
Lumber.....	54,919	35,117	I. 19,802	56.3
Grain.....	27,706	79,177	D. 51,471	65.0
Iron and iron ore.....	17,060	20,091	D. 3,032	11.9
Coal.....	25,125	38,381	D. 13,256	36.7

Heretofore the coal shipments have generally been much smaller than last year.

The average per day since the canals opened, this year and last, has been:

	1881.	1880.	Decrease.	P. c.
Tons shipped.....	27,660	29,785	2,125	7.1
Miles cleared by boats.....	36,663	48,551	11,888	24.3
Tolls.....	\$3,340	\$5,000	\$1,660	33.2

The simple statement of the total tons shipped, etc., in two seasons shows very much greater decreases: 23 per cent. in tons, 37 per cent. in boat miles, and 45 per cent. in tolls, but this is due to the much shorter season this year—142 down to Oct. 7, against 171 last year.

For the week ending Oct. 14 the traffic was:

	1881.	1880.	Decrease.	P. c.
Tons shipped.....	171,105	238,350	67,245	28.3
Miles cleared by boats.....	223,304	400,707	177,403	44.3
Tolls.....	\$19,795	\$49,606	\$29,811	60.1

The chief items of freight were, in tons:

	1881.	1880.	Inc. or Dec.	P. c.
Lumber.....	59,551	44,838	I. 14,713	32.8
Grain.....	23,342	107,037	D. 84,695	79.1
Iron and iron ore.....	22,272	21,154	I. 1,119	5.3
Coal.....	38,403	26,102	I. 12,301	47.1
Sugar and molasses.....	306	608	D. 302	49.0

The grain shipments are this year much less than the coal shipments, and nearly as small as the iron shipments, and hardly one-third of the lumber shipments. Last year, lumber, coal and iron together were but 92,094 tons, against 107,037 tons of grain.

Chicago and Milwaukee Receipts.

Receipts at Chicago and Milwaukee for the two weeks ending Oct. 14 have been, for four successive years:

	1878.	1879.	1880.	1881.
Chicago:				
Grain, bu.....	6,391,005	8,068,555	9,924,639	7,193,381
Flour, bbls.....	121,707	148,131	131,211	239,246
Hogs, No.....	138,158	269,403	229,604	241,781
Milwaukee:				
Grain, bu.....	1,699,311	2,310,313	1,475,657	942,434
Flour, bbls.....	101,578	122,528	128,916	152,424
Hogs, No.....	10,633	21,745	20,865	25,066

The receipts of grain in both places are thus much less

than last year or in 1879, and taking flour (reduced to bushels) and grain together we have at both places:

	1878.	1879.	1880.	1881.
Bushels.....	9,665,098	11,504,833	12,570,867	9,898,330

The receipts this year are thus 21½ per cent. less than last year and 15 per cent. less than in 1879, but 9 per cent. more than in 1878.

The Emigrant Ticket Troubles.

A dispatch from Chicago, Oct. 18, says: "At a meeting of the Western passenger agents yesterday, Commissioner Dixon was instructed to notify the Baltimore & Ohio Railroad that unless it settled its account with the Western lines for emigrant rebates, its tickets would be withdrawn from all the offices of the association."

THE SCRAP HEAP.

Locomotive Building.

At the last pay disbursed at the Rogers Locomotive Works the roll consisted of 1,746 men, which touches the mark of the most prosperous period of 1873, just before the panic. By Jan. 1 it is expected that 2,000 will be employed at these works alone, and including the Danforth Locomotive and Machine Works and the Grant Locomotive Works, not less than 5,000 men in all in building locomotive engines. Forty-four finished engines were turned out last month, which is at the rate of one and three-quarters for each working day, which is just equal to the largest number ever turned out before in any one month in 1873; but it should be taken into account that the locomotive of the present day represents about one third more weight of machinery and a proportionate excess of power as compared with the productions of a decade since.—*Pittsburgh (N. J.) Press, Oct. 15.*

The Pittsburgh Locomotive Works have taken a contract to build 10 standard-gauge engines for the Pittsburgh & Western road.

The Rhode Island Locomotive Works in Providence last month turned out 21 engines, 18 of them for the Chicago, Milwaukee & St. Paul road.

The Iron & Steel Association of Virginia has bought two locomotives in England for use at its furnaces and on the railroad connecting them with the Chesapeake & Ohio at Goshen, Va. These will be, as far as we know, the first locomotives imported into the United States from England for many years. The Association is an English corporation.

A large new building is being erected for the Rochester Steam Gauge & Lamp Works at Rochester, N. Y., the present quarters being too small for the business. The works manufacture steam gauges and locomotive headlights, and also other kinds of railroad lamps and lanterns.

Car Notes.

The Wason Manufacturing Co. at Brightwood (Springfield), Mass., has just completed 10 passenger cars for the Wabash, St. Louis & Pacific, and is building passenger cars for the Boston & Providence, the Savannah, Florida & Western, the Indianapolis & Evansville, the Wisconsin Central, the Central Iowa, the Northern Pacific and the Oregon Railway & Navigation Co. A large lot of freight car castings for the Panama Railroad are being shipped.

The Elkhart Car Works Co. has been organized at Elkhart, Ind., with \$50,000 capital stock. The trustees are B. E. Merritt, E. Mulcahy and George F. Schutt.

The car-spring shop belonging to the steel works of Benjamin Atha & Co. at Newark, N. J., caught fire on the evening of Oct. 15 and was almost entirely destroyed, causing a loss of \$15,000.

The Muskegon Car Works, at Muskegon, Mich., have begun work with several orders on hand.

The Philadelphia & Reading car shops in Reading, Pa., now employ 826 men. Part of the shops are running 15 hours a day.

The Connellsville Machine & Car Co., at Connellsville, Pa., Connellsville, Pa., is building some coke cars and a large number of pit cars and lorries for coke works in that region.

It is said that car works are to be started at Edenburg, Clarion County, Pa., and that nearly enough subscriptions to the stock have been secured.

The Laporte Car Co. has nearly completed its new shops at Laporte, Ind. The works will have a capacity of 12 freight cars and 100 wheels a day.

It is reported that the works of the Marshall Car & Foundry Co., at Marshall, Tex., have been sold to Jay Gould, and that they will hereafter be used entirely in building cars for Mr. Gould's Southwestern lines.

The New York Central & Hudson River, the Lake Shore, the Michigan Central and the Canada Southern have, it is said, decided to adopt a modification of the Thielsen iron truck as their standard freight car truck. The same companies have also decided to use the Hewitt journal-box cover on all new cars.

Negotiations are reported in progress for a consolidation of the Terre Haute Car Co. and the Indianapolis Car Works. The plan includes the removal of the Terre Haute shops to Indianapolis.

Bridge Notes.

The Richmond & Allegheny Company will receive at its office in Richmond, Va., until Oct. 31, for furnishing and erecting complete five spans of Howe-truss railroad bridge, crossing the James River adjacent to the line of the road at Bremen, 66½ miles from Richmond. The spans will be about 146 ft. each. Further information can be had of Walter G. Berg, Engineer in Charge, at Richmond.

The Iron City Bridge Works in Pittsburgh are running double time with two sets of hands, in order to keep up with their many contracts.

Iron and Manufacturing Notes.

The Spang Steel & Iron Co. in Pittsburgh has just completed a second open hearth Siemens-Pernot steel furnace of 10 tons capacity and a new mill for rolling steel plates.

Arrangements are in progress for reorganizing the South Boston Iron Co., which recently suspended payment. The stock is to be increased from \$100,000 to \$500,000, and the new capital will enable the company to resume payment.

Nova Scotia Furnace, in Dent County, Mo., went into blast last July, and is now making 60 tons of charcoal iron a day.

The furnace of the Colorado Coal & Iron Co. at South Pueblo, Col., is in blast and doing well. The steel works will be ready to start in December.

The Moran Bolt & Nut Manufacturing Co. has been organized in St. Louis with \$50,000 capital stock.

The Phoenix Iron Co., Phoenixville, Pa., has just succeeded in rolling a bar of what is known as "1½-in. guide rounds," which, after the crop ends had been taken off and trimmed ready for the market, measured 65 ft. 5 in. This is the largest bar of that diameter ever rolled in any mill in the world. Two new 18-in. trains, three-high, are being made for the company's new mill at Phoenixville. It will take several months to complete them. When erected there

will be four roll trains running. An additional gas producer will be built, plans for which have already been made.—*Iron Age.*

Pacific Furnace, at Marquette, Mich., has gone out of blast.

Chester Furnace, in Morris County, N. J., will soon go into blast.

The Iron & Steel Association of Virginia, an English corporation, is building two large blast furnaces near Goshen, Va., where it owns some 4,000 acres of iron ore lands. The company has built a railroad to connect with the Chesapeake & Ohio, and is building a track from the furnace to the mines. Mr. W. N. Page is General Manager and E. Shepard is Engineer.

Hoopes & Townsend, of Philadelphia, have a large case of their bolts, nuts and rivets at the Atlanta Exposition.

Atkins Brothers, at Pottsville, Pa., have two furnaces in blast and are preparing to blow in the third.

The blast furnace at Kirkland, N. Y., has been obliged to stop owing to the formation of a "scaffold" in the furnace. It will be cleaned out and started up again as soon as possible.

An establishment has been started at New Shoreham, R. I., for utilizing the black sand ore found on Block Island. The ore is separated from the waste sand by a magnetic apparatus and is sent to Rockaway, N. J., where it is used in making steel by a new process.

Petersburg Forge, in Bedford County, Pa., has been leased to Eichelberger & Co., of Hopewell, Pa., and will be started up at once.

The Rail Market.

A large business is reported in steel rails; the prices are somewhat uncertain. Quotations may be given at about \$60 per ton at the mill. English rails are offered at \$60 to \$62, according to port of delivery, with a good deal of business to Southern and Southwestern roads.

Iron rails are just now quiet, with inquiries for small lots only, chiefly light rails. Quotations are \$47.50 to \$48 per ton at mill for heavy sections, and \$48 to \$52 per light rails. English heavy rails are offered at \$45.50 to \$47 at tide-water.

Steel blooms are very active, with sales up to 20,000 tons reported in Philadelphia. Current prices vary considerably, being named at \$43.50 to \$46 per ton, duty paid.

Old iron rails are unsettled, but somewhat firmer. Philadelphia prices are \$27.50 to \$30 per ton for T-rails and \$30 to \$30.50 double-heads, but few sales are reported.

Spikes are firm and higher, at \$3 per 100 lbs. Fish-plates are quoted \$2.50 to \$2.60 per 100 lbs.; track-bolts, \$3.25 to \$4, according to specification.

The German Railway Regiment.

In common with every other fraction of the German army, the German railway regiment holds annually its autumn manoeuvres. These exercises have been carried out this year at Klausdorf, and comprised the construction, within 48 hours, of a field railway 1½ kilometres in length and a viaduct 80 metres long and from 6 to 60 feet high—the centre arch of the viaduct having a span of over 30 ft. The task was completed well within the specified time, relays of men being employed to carry on the work night and day; and immediately the whole of a line was laid a locomotive was run over it to test the solidity and exactness of its construction. The railway regiment is a comparatively new formation in the German army, its first battalion having been organized only in May, 1871; and the perfection it has attained in the accomplishment of its special duties is largely owing to the interest taken in it by Count von Moltke himself. The corps has thus been the subject of much patient consideration and provision, and affords another evidence of the fact that the organization and training of the more purely fighting element of their army is not deemed by the German military authorities to be all the preparation that is necessary to insure success in war.

A Model Yard System.

Superintendent Van Horne, of the Chicago, Milwaukee & St. Paul, devised a system of yard trackage for the road in Chicago, which since its adoption has been a wonder of convenience and safety in the handling of cars. The same methods have been provided by the company in St. Paul, and now it has the best yards in the city for the despatch of business without confusion and in quickest time, and of special benefit to merchants and other freight receivers. The main track of the company used entirely by passenger cars leading to the Union Depot has not a single switch upon it, so that it is not used by freight cars at all. Just south of it is another track for freight purposes, which branches off toward the river, east from the end of the new freight house. Between that track and the freight house is a 50-ft. drive way for teams. On the south of the house is another track running along the river front, eastward down to the bluff. At the point of branching off by the freight track a series of connecting tracks begin, nine in all, that run to the bluff. At these points are switches by which cars incoming or outgoing can be located according to their destination in the making up of trains. If a train of cars comes in it can be run down to the particular track intended to receive certain specified cars. Cars for St. Paul will be by themselves, so also Chicago cars, western cars, cars for the various divisions of the road, etc. Thus the freightman can know just where to find cars wanted, teamsters can locate the cars they seek, and at the same time there is no interference with the passenger business, and no danger of passenger cars colliding with freight, and no waiting of the two sets of cars to be moved out of the way of each. By this system several hundred cars can be accommodated at once without any confusion. Some of the tracks are already in use, but the bad weather has retarded the general surfacing up. As soon as the weather is pleasant this work will be finished up, and then traffic will be put through in fine shape.—*St. Paul Pioneer-Press.*

Telegraphs and Railroads in China.

Advices from Hong Kong, Sept. 14, say: "The construction of the telegraph line from Shanghai to Tientsin is going on satisfactorily. The presence of government officers and the government statement of property checked whatever feelings of hostility the natives have felt for such an innovation. The line is expected to be open for business by the end of the year."

"The China Merchants' Steam Navigation Co. has invited subscriptions for a special purpose, presumed to be the completion of a tramway system, which is to carry coal from the Kaiping mines. The sum asked, 1,000,000 taels, was raised in one day. The Kaiping collieries are the first that have been ordered to be worked in that region. They are capable of supplying sufficient coal of a good quality to meet the requirements of the parts of China from Tientsin to Canton. An imperial edict has been published ordering Lien Kun Yah, Viceroy of the Tientsin Kiang, to proceed to the capital at once. Feng Yo Lien, Superintendent of the Yangtze defenses, will take his place. The change is regarded with great satisfaction, as likely to tend to the development of the railway and other projects."

Heating Cars by Steam.

A new method of heating passenger cars has been intro-

duced. It is called the Graydon safety railroad car heating method. The steam is taken from the blower pipe and is stowed away in a reservoir in the baggage car, from which it is fed to the heating pipes in the rear cars, making the circuit of the train, returning to the water taken in the tender of the engine. The pipes are kept free from water by the constant movement of the steam, which carries with it the condensation in shape of moist steam. As the steam is constantly in motion, there is no probability of freezing, and the heat produced is simply a matter of radiating surface in the cars.—*Utica (N. Y.), Herald.*

The Fontaine Locomotive.

Fontaine Engine, No. 2, which has just been reconstructed at the Erie repair shops, by its builders of the Grant Works, was this morning taken away and will be placed on the Pennsylvania Railroad. It will be used on the fast trains between New York and Philadelphia. Fontaine No. 1 is still on the Canada Southern Railroad, running between Amherstburg and St. Thomas, and is reported as doing first-class work. It was for a long time in charge of Engineer Clapp, who fully understands the working of the new invention and has now been engaged to thoroughly test the merits of Fontaine No. 2.—*Patterson (N. J.) Press, Oct. 15.*

The Prizes for Improved Stock Cars.

At the annual meeting of the American Humane Association in Boston, Oct. 19, President Brown stated that no one of the 700 designs for cattle cars that have been presented has so complied with the requirements thereof that the prize of \$5,000 voted by the Association can be awarded to its inventor.

Zinc or Copper.

The man who travels on the railroad, and sits down by the side of lone females while laboring under the impression that he recognizes a likeness in their faces to his wife's aunt's cousin, met his match on one of the roads in this vicinity lately. He sat down in the half of a seat, the other half of which was occupied by a pleasant-faced young lady. His first question was, "Pardon me, miss, but is your name James?" "No sir," was the reply, "my name is not James. But pardon me, is your name Zinc or Copper?" "Zinc or Copper? No ma'am," said the astonished man. "What led you to suppose I had such names?" "Excuse me," was the quiet reply, "but I thought certain you must be first cousin to a brass foundry." The man fell over two seats and kicked a bird cage half way down the car in his haste to get into the smoker, while the young lady smiled a gentle smile behind her handkerchief. It was a proof of the old adage, that a witty answer turneth away bores.—*Oil City Derrick.*

A New Electric Railway.

A dispatch from London, Oct. 1, says: "The ceremony of cutting the first sod on the Giant's Causeway & Port Rush Railroad, in Ireland, a day or two ago, at the latter place, is an event of great importance in railway enterprise, owing to the fact that it is intended to work the tramway by electricity, the company thus being the first to introduce into the United Kingdom electricity as a motive power for railroad propulsion. Dr. Siemens is a large contributor to the funds. It is estimated that the expenses for haulage on a tramway such as this with horses would be 23 cents per mile and by steam about 15 cents, while it is supposed that the working expenses by an electrical motor will not reach 2 cents per mile."

OLD AND NEW ROADS.

Allegheny Valley.—This company paid \$12 cash on each \$35 coupon due Oct. 1 on the income bonds. The balance of \$23 on each was, in accordance with the terms of the bonds, paid in scrip convertible into new income bonds.

Atchison, Topeka & Santa Fe.—The President of this company has just issued a circular to the stockholders of the company announcing the issue of the scrip dividend of 50 per cent. In it he says:

"The directors of your company have realized for some time past that as the result of the administration of the company's affairs there had been a gradual accumulation, in respect of which there should equitably be a distribution among the stockholders, in order that their interest in such accumulation might be represented in some suitable and convenient form. Upon an examination of the accounts of the company to Aug. 31, 1881, its assets are found to include the following: Construction account, \$28,979,014.20; material and supplies on hand, \$1,433,690.19; beside which there are bonds or stock held by or for the company in connecting and leased lines, and a balance of \$637,220.50 due from the government, making an aggregate of \$88,257,454. The company also owns 1,900,000 acres of land in the state of Kansas. The funded debt amounts to \$20,654,000, and the floating debt and current liabilities are more than offset by cash, cash items and receivables not included in the statement of assets.

"The amount of the capital stock of the company outstanding Aug. 31, 1881, was \$28,265,800, which, under the provisions of circular 54, may be increased to \$34,423,800.

"Under these circumstances, it has seemed to the directors to be proper that there should be a distribution in the form of a stock dividend to the amount of 50 per cent. of holdings of stock Oct. 24, 1881, and that the subscribers to the stock of this company, under circular 54, in case they shall, on or before Dec. 1, 1881, pay for the shares of stock to which they may then become entitled, should be entitled to the like stock dividend thereon. It has also seemed to the directors to be proper to grant to stockholders of record on Oct. 24, 1881, and to the persons entitled to stock Dec. 1, 1881, under circular 54, the privilege of subscribing at par on or before Nov. 15, 1881, to an amount of the capital stock of this company, which shall be equivalent to 15 per cent. of the stock so held by them on Oct. 24, 1881, or to which they may be so entitled on Dec. 1, 1881, respectively; the subscribers to such new stock to be entitled to receive from time to time therewith the 50 per cent. stock dividend upon the amount of such new stock which shall be issued to them. The directors desire by means of the proceeds of this subscription to still further increase the facilities and promote the efficiency of the system of railroads, and to provide for the rapidly increasing business which we are called upon to transact. A meeting of the stockholders of this company has been called for Nov. 12, 1881, to authorize the increase of the capital stock of the company to the amount requisite to carry out the foregoing plan, and it is therefore desirable that you should at once sign and return the enclosed proxy. The gross earnings of the road for the present year promises to be about \$12,000,000, or 40 per cent. above those of 1880. During the next 12 months we shall receive business from the Atlantic & Pacific Railroad, of which 250 miles have already been finished; from the Southern Pacific Railroad, with which we connect at Deming, but from which we have as yet received but little; from Mexico, through the Mexican Central Railroad, which is being constructed south of El Paso; and from the mines of Arizona and the Sonora road, to meet which we are now building our line south from Benson. We have also come into possession of large and valuable tracts of coal land, which will afford us new and profitable transportation. It is

therefore not unreasonable to hope that the receipts in 1882 will exceed the large receipts of the present year."

The company offers to stockholders of record at the close of business Oct. 24, 1881, and to persons entitled to stock Dec. 1, 1881, under circular 54, at par, a number of shares of the capital stock of the Atchison, Topeka & Santa Fe Railroad Company, equal to 15 per cent. of the amount of the stock of said company standing to their credit on the books of the company Oct. 1881, or to which they may be entitled Dec. 1, 1881, respectively. These shares will be, in every respect, equal to the old shares, except that any cash dividends which may be declared by the directors will only be paid on the shares that shall have been issued at the time of the declaration thereof. The subscription will be payable at the Boston office of the company in instalments of one-third each—Jan. 9, 1882, March 15, 1882, May 20, 1882, when one share will be issued for every \$100 paid under assessment; but no share will be issued on any prepayment of assessments not due. Prepayment of the different instalments will be allowed, and interest paid by the company at the rate of 5 per cent. per annum, from the date of the prepayment to the time when the instalment is due. Shareholders will be allowed until Nov. 15 to send in their subscriptions.

This company has begun work on a branch from Socorro, N. M., to the San Pedro coal field; it will be 22 miles long. A mine has been opened at San Pedro and the coal is said to be of very good quality.

Atlantic, Tennessee & Ohio.—This road has been leased to the Charlotte, Columbia & Augusta Company at a fixed rental of \$25,000 a year for 99 years, and thus becomes a part of the Richmond & Danville system. It is 48 miles long, from Charlotte, N. C., northward to the Western North Carolina at Statesville. It has been on the market for some time, and was to have been used as part of the Virginia Midland extension from Danville to Charlotte.

Brazos, Mineral City & Northeastern.—This company has filed articles of incorporation for a railroad from the mouth of the Brazos River north by west to Hempstead, Tex., about 100 miles.

Buffalo, Pittsburgh & Western.—The Buffalo Commercial Advertiser says: "The various extensions of this road are being carried forward to completion with considerable energy. Mr. J. W. Jones, the President of the company, informed our reporter this morning that track laying between Brocton and Dunkirk has been commenced and the road-bed for the whole distance between Brocton and Buffalo is being put in order as rapidly as possible. There are 23 miles on this extension ready for the rail. Twenty miles more will be finished in a few days and the balance will be ready within 30 days. On the River Extension, 18 miles will be completed by Nov. 1 and the remainder by Jan. 1. This road will enjoy the same terminal facilities here as the Buffalo, New York & Philadelphia, and the New York, Chicago & St. Louis Railroad, which is jointly engaged in building the double track between this city and Brocton. It is also understood that the New York, West Shore & Buffalo will enter the same depot here as the roads mentioned."

The old suit of the Pennsylvania Transportation Company has been decided in favor of this company by the Pennsylvania Circuit Court, setting aside the report of the Master in the case. The claim was for about \$200,000, and was based upon a judgment obtained against the Oil Creek & Allegheny River Railroad Company, the plaintiff claiming that the sale of the property and franchises of that company under the mortgage, and the subsequent organization of the Pittsburgh, Titusville & Buffalo, now Buffalo, Pittsburgh & Western, were fraudulent as to creditors, and that the latter company took the property in trust for the creditors of the Oil Creek & Allegheny road. The Master decided that there was no fraud in fact but there was fraud in law. Judge Church in reversing the Master decided that there was fraud neither in law nor fact.

Burlington & Missouri River in Nebraska.—On the extension of the Republican Valley line eastward to the Missouri River, track is now laid from the river terminus at Nemaha City, Neb., west by south 12 miles to Calvert, and work is progressing steadily toward Blue Springs.

Central, of Georgia.—In answer to several petitions for increase of pay, President Wadley has issued a circular to employees, of which the following is the principal part:

"While the board cannot hope to meet the expectation of all the petitioners, they deem it due that an answer should be made informing them of the conclusions arrived at. While it may be true, as alleged, that the advance in provisions and rents have increased the cost of living, it is also true that the board must be controlled, to a great extent, in fixing the rate of pay by the supply and demand for the labor in the various trades.

"Their investigation develops the fact that the average pay of the men in the several departments of this company, with the exception of the laborers in the roadway department, is above the average rate paid by roads in this and adjoining states; and while this is the case, they feel that they are doing their employees no injustice. This is a fact, however, that the recent increased demand in the country for certain kinds of skilled labor has, to some extent, monopolized the supply, and to those the company propose to make an advance commensurate with the necessity.

"It is the opinion of the board, that the individual merits and demerits of employees in the same character of service have not heretofore been sufficiently recognized by difference in the pay, and it is proposed to establish more grades with difference in pay, and look to the heads of departments to take into more careful consideration the individual merits of their employees, thus adjusting the rate paid, more fairly to the value of their services to the company.

"It is proper here to state that whatever advance is made will be solely on the grounds of the increased demand for that particular class of labor, and by no means under the supposition that the earnings of the company for the coming year are promising any justification for an increase of expenses; on the contrary, it is the deliberate opinion of the board that were it a question that could be settled upon the principal of equity between the stockholders and employees, instead of upon the principle of supply and demand, the rates now paid could not be advanced; and it is also proper to state that the board fears the decrease in the revenues of the road, and the decreased demand for labor of all kinds will, in the near future, necessitate a reduction. While it is to be hoped that this will not be the case, the board cannot, in view of the low scale of rates forced upon the company by the Railroad Commission on all local business, and the constantly decreasing rates on all through business at which the company is obliged to work in competition with other lines, see any promise of other results."

Chesapeake & Ohio.—Track on the Peninsula Extension is laid to Williamsburg, Va., 48 miles east by south from Richmond. The extension was to have been finished to Newport News, and the track laid on a branch to Yorktown also, this week, but we are not yet advised of its completion.

Chesapeake, Ohio & Southwestern.—The contract for the construction of the gap between Dyer, Tenn., and

Covington on this road has been let to Dunavant, Kelly & Piper, who have already put a considerable force at work. They are to complete the road by April next. When this road is completed and the Elizabeth & Big Sandy, the Chesapeake & Ohio will have continuous line from the Chesapeake to Memphis.

Chicago, Milwaukee & St. Paul.—The following Milwaukee dispatch gives further particulars of the decision of the United States Circuit Court in the Barnes suit, which was briefly noted last week. The dispatch says:

"The litigation over this somewhat celebrated case has been going on for years and the decision, which it was supposed would finally dispose of the matter, will be a surprise to the many interested parties. The suit was brought in 1868 to foreclose the third mortgage, covering \$200,000 bonds of the old La Crosse & Milwaukee Railroad, which had been absorbed by the Milwaukee & Minnesota Company. The present St. Paul Company pleaded to the bill that the mortgage was foreclosed in 1859 by advertisement and sale by the trustee of the Milwaukee & Minnesota Company, and that the sale to the trustee, after becoming purchaser of the mortgaged property in 1859, immediately, together with the bondholders, formed, under the existing law, the Milwaukee & Minnesota Company transferred to it all the property and all the rights which are purchased under the mortgage. Afterward, all the bondholders under the mortgage exchanged their bonds for stock of the new company, and from that time the Milwaukee & Minnesota Company was treated and regarded as owner of the equity of redemption of the La Crosse & Milwaukee road, in all proceedings to foreclose prior mortgages subsequently had, the Milwaukee & Minnesota road was defendant and the owners of the equity of redemption which it acquired by the foreclosure of the third mortgage. The plea further states that the Supreme Court recognized this named company as owner and having succeeded to the rights of the property of the trustee, and ordered the property of the trustee delivered to them on their paying certain money, and the complainant demurred, by sending this plea down as an argument and contending that it was no answer. This was argued before Judges Drummond and Dyer in 1879, and the plea sustained as a sufficient answer. Leave, however, was given to the complainant to deny the truth of the allegations of the plea. Testimony was taken upon that issue and the case was again argued before the judges. The decision rendered was to the effect that the defendant had proven to the satisfaction of the court that of the \$200,000 of bonds \$174,080 were either converted to the stock of the new company or otherwise cancelled and destroyed; as to the remaining \$25,920 bonds, the judges intimated in their decision that they may be barred by the lapse of time or other causes, but deem it proper to give the parties an opportunity to introduce further testimony. An order was made giving the defendant the right to file an answer as to these bonds, the parties thereafter to introduce such proof as may be advised."

Cleveland, Tuscarawas Valley & Wheeling.—It is said that this company is trying to make arrangements for the extension of its road from the present terminus on the Ohio at Bridgeport, opposite Wheeling, down to the river to Bellaire, in order to secure a connection with the Baltimore & Ohio.

Delaware & Slatington.—This company has been organized to build a railroad from the Delaware at Portland, Pa., to Slatington in Lehigh County, about 27 miles.

Elizabeth City & Norfolk.—On Oct. 15 the track on this road reached the Perquimans River, 16 miles southwest from Elizabeth City, N. C., leaving 13 miles to be laid to reach Edenton. On Oct. 17 tracklaying was begun from Edenton eastward, and the party from that end of the road will lay the rails to the Perquimans. It is expected that the road will be opened through to Edenton not later than Nov. 15.

Galveston, Harrisburg & San Antonio.—On the eastern end of this line the grading is now nearly finished to Rio del Diabolo, 175 miles westward from San Antonio, and track is laid to Sabina Creek, 80 miles. On the graded section several bridges are yet to be built.

On the western end of the line, the El Paso Division (which we have hitherto credited to the Southern Pacific), trains now run regularly from El Paso east by south to Camp Rice, 53.8 miles. The track is laid some 45 miles further, and is steadily advancing. It is expected that the two ends of the line will meet on the Rio Grande near the mouth of Pecos next summer. This division is operated by the Southern Pacific.

Georgia & Florida Southern.—The proposed line of this road is from Macon, Ga., due south to the Florida line, where it is to connect with a road to Tampa Bay to be built by a Florida company. The distance from Macon to the Florida line is 164 miles. The company claims to have secured the money needed to build the road.

Goshen Furnace.—This road is now completed from the Chesapeake & Ohio at Goshen, Va., southward 1½ miles to two large blast furnaces now nearly finished; it is of standard gauge. The road and furnaces are owned by the Iron & Steel Association of Virginia, which is also building a narrow-gauge road 12 miles long from the furnaces up the Bratton Run Valley to a large iron-ore property on which several mines have already been opened.

Green Bay & Minnesota.—This road was turned over by the Receiver on Oct. 15 to the Green Bay, Winona & St. Paul Company, organized by the purchasers at the foreclosure sale. The management is unchanged, Mr. Case, late Receiver, being now General Manager.

The securities of the new company will soon be ready for delivery to the bondholders who joined in the purchase.

Indianapolis & Hannibal.—A movement is reported to build a line from the Indianapolis & St. Louis at Litchfield, Ill., west by north to Hannibal, Mo., about 100 miles, the object being to give the Hannibal & St. Joseph an independent outlet eastward.

Lake George & Champlain.—This company has been organized to build an extension of the Addison Railroad from Ticonderoga, N. Y., to Lake George.

Long Island.—The New York Supreme Court on Oct. 17 made an order discharging the Receiver and restoring the road to the company in accordance with the applications recently made and argued in Court. Mr. Austin Corbin, Receiver, will accordingly transfer formal possession and control to Mr. Austin Corbin, President of the Long Island Railroad Company.

Louisville & Nashville.—This company has let a contract to Baletine & Rodgers to raise the track of the New Orleans Division nearly all the way from Mobile to New Orleans. The track will be raised three to four feet, and it is thought that this will prevent damage from high water almost entirely. The work will take some time, as it must be done without interfering with the passage of trains.

Maine Central.—Several lines are to be surveyed for the proposed extension from Dexter, Me., northeast to Ft. Fairfield or Caribou in the Aroostook country. The distance is not far from 150 miles, much of it through a thickly wooded region with very few inhabitants. An effort is being made, in the interests of Bangor, which has heretofore had most of the Aroostook trade, to induce the company to give up the Dexter line and build a road from Mattawamkeag or Bancroft on the European & North American road. This would require only 80 or 90 miles of new road, through a better settled country.

Manhattan Elevated.—It is understood that a compromise has been agreed upon by the directors and leading stockholders of this company and the Metropolitan and New York Elevated companies. The terms of the settlement so far as made public are as follows: "All claims held by the New York Company and the Metropolitan Company against the Manhattan shall be canceled forthwith, a full release being executed. In return for this the Manhattan will not enforce payment for the \$13,000,000 of stock received by the lessor companies. Having thus squared all past accounts, it is proposed that a new start shall be had, the Manhattan to continue as a manager of the roads as heretofore, operating, however, under a modified lease, by the terms of which the earnings of the roads shall be apportioned among the three, with a preference given the New York to the extent of 6 per cent. After the interest of the bonds of both roads has been paid the Metropolitan and Manhattan are to be entitled to 4 per cent. each, any surplus to be distributed pro rata."

The agreement will have to be ratified by the stockholders and for the present proceedings are stopped by a temporary injunction granted by the Supreme Court at the suit of a Metropolitan stockholder.

Marquette, Houghton & Ontonagon.—This company's surveying parties are locating and cutting out through the woods the line of the extension from L'Anse, Mich., to Ontonagon. The distance is about 50 miles.

The company is putting up strong snow-fences at all the exposed points on the line between Marquette and L'Anse.

Massachusetts Central.—Track is now laid to Oakland station in West Boylston, Mass., the crossing of the Worcester & Nashua road. This is 13 miles westward from the late terminus at Hudson, and 41 miles from Boston. It is expected that trains will run to the new terminus next week, and that some 18 miles more will be ready for trains by Nov. 1 next.

Nashville, Chattanooga & St. Louis.—Track on the Centreville Branch (formerly the Nashville & Tusculosa road) is now laid to Mill Creek, Tenn., four miles southwest from the late terminus at Graham, and 24 miles from the main line at Hickman. The line is now nearly all graded from Mill Creek south to Centreville, eight miles.

New York & Council Bluffs.—This company has filed articles of incorporation for a railroad across Indiana running nearly due east and west and passing through Logansport.

New York, Lake Erie & Western.—Through freight trains began to run regularly over the Bergen County Short Line from Ridgewood, N. J., to Rutherford, Oct. 16, to the great relief of the main tracks through Paterson and Passaic. Some freight trains are run by the old main line and will continue to take that route until the change of the locomotives from 6 ft. to standard gauge is completed, as there is no third rail on the Short Line.

It is said that a second track will be laid on the Newburg Branch from Newburg to Vail's Gate, the junction of the Newburg Short Line with the old Newburg Branch from Grey Court.

This company's statement for August and the eleven months of its fiscal year from Oct. 1 to Aug. 31 is as follows:

	August.	Eleven months.
1881.	1880.	1880-81.
Gross earnings.....	\$1,772,895	\$1,606,873
Expenses.....	1,095,323	957,685
Net earnings.....	\$677,572	\$649,188

For August the increase is \$166,022, or 10.3 per cent., in gross earnings, and \$28,184, or 4.3 per cent., in net earnings. For the eleven months the increase in gross earnings was \$2,074,715, or 12.3 per cent., and in net earnings, \$586,628, or 9.3 per cent.

Nittany Valley.—This company has been organized to build a narrow-gauge road from Bellefonte, Pa., due east to Zion and Hubersburg. The distance to be built at once will be about five miles, from Bellefonte to the iron ore banks of Valentine & Co., from which about 25,000 tons of ore a year is now hauled to Bellefonte by teams. The capital stock is \$25,000 in \$50 shares.

Northeastern, of Georgia.—Contracts have been let for the extension of this road from Clarksville, Ga., to Tallulah Falls as follows: Sections 8, 9 and 10 to A. W. Thompson & Co.; sections 11, 12 and 13 to E. M. & G. W. Clayton; sections 14, 15 and 16 to Rice & Coleman; sections 17, 18 and 19 to Martin Shea & Co. All these contracts are to be completed by June 1, 1882.

Grading on the extension from Rabun Junction, Ga., to Clarksville is so far advanced that the company expects to run trains to the last-named place by Jan. 1 next. There is a good deal of heavy work on the line.

Ohio.—The meeting to organize this company, formed by the consolidation of the Cleveland, Columbus, Cincinnati & Indianapolis and the Cincinnati, Hamilton & Dayton, was to be held in Cleveland this week, and there is considerable speculation as to the result. It is generally reported that Mr. Vanderbilt has secured a considerable interest in the stock and that he will name several directors, though it is not supposed he has a majority. The New York Supreme Court, at the suit of James McHenry, has enjoined President Jewett, of the Erie, from voting on 11,477 shares held by him, and claimed by Mr. McHenry, who alleges that the stock is really his and is held by the Erie only as a pledge or collateral. This is some of the stock bought for the Erie several years ago and is part of the matters in litigation between that company and Mr. McHenry.

On Oct. 19, at Columbus, O., an application was made on behalf of Hugh J. Jewett and others for an injunction to prevent the completion of the consolidation, on the ground that the provisions of the law of 1874 have not been complied with, and also that the debt of the Cincinnati, Hamilton & Dayton Company is much heavier in proportion than that of the Cleveland, Columbus, Cincinnati & Indianapolis, and that their stock would, for that reason, be depreciated in value by a consolidation which would load their property with this surplus debt. The Court granted a temporary injunction, pending further proceedings.

Ohio & Mississippi.—The election last week resulted in the election of the candidates of the present management by vote of about 153,500 to 120,950 for those of the Gould party. The election was held without legal interference, the court having refused to grant the injunction asked for by Mr. Gould the day before the meeting, or to interfere in

any way, holding that no sufficient evidence had been presented to warrant such action. The meeting passed off quietly, the Gould people doing nothing except to present a formal protest against the voting of certain shares.

Oregonian.—Under the lease concluded a short time since, the Oregon Railway & Navigation Company assumed control of this company's lines Oct. 1. An order was issued directing all officers and employees to continue in their respective positions, and requiring all reports hereafter to be sent to C. H. Prescott, Manager of the lessee's lines.

The Oregonian Company owns 105 miles of narrow-gauge road in the Willamette Valley on both sides of the river, the northern terminus being on the Willamette, 30 miles south of Portland.

Painesville & Youngstown.—A dispatch from Painesville, O., says that an agreement has been concluded for the sale of this road to the Pittsburgh & Western Company. The road is of 8 ft. gauge and is 63 miles long, from Youngstown, O., to Painesville and Fairport on Lake Erie. It has been a very unprofitable property.

Later dispatches say that the report is premature and that the negotiations are still in progress.

Peachbottom.—The United States Circuit Court in Philadelphia has appointed Mr. Sussex D. Davis Master to appportion and distribute the fund arising from the sale of the Eastern Division of this road under foreclosure, which took place Sept. 1 last.

Pennsylvania.—This company has given orders to its employees to be in readiness for the starting of trains from the new depot at Broad and Filbert streets in Philadelphia on Nov. 15.

The annual inspection of the company's lines, both east and west of Pittsburgh, was begun last week, when President Roberts started from Philadelphia in a special inspection train, accompanied by a number of the officers of the company.

It is reported that work will soon be begun on the new line from Philadelphia to Germantown and Norristown. The company is securing the right of way.

Philadelphia & Reading.—The cash accounts of the Receivers for July and August, as audited by the Master to the Court, are as follows:

	Railroad Co.	Coal & Iron Co.
Cash, July 1.....	\$241,950.15	\$9,360.10
Receipts from all sources.....	2,572,070.09	1,280,383.53
Total.....	\$2,814,020.24	\$1,289,743.63
Disbursements for July.....	2,663,653.00	1,273,763.94
Balance Aug. 1.....	\$150,367.24	\$15,988.69
Receipts in July.....	3,180,100.83	1,565,595.05
Total.....	\$3,330,468.07	\$1,581,583.74
Disbursements in August.....	2,965,673.02	1,571,261.63
Balance, Sept. 1.....	\$364,795.05	\$10,322.11

In the matter of the taxes claimed by the state of Pennsylvania, the master reports that the amount due as shown by the accounts is \$71,169.52. He further recommends that the determination of the legality of said taxes be left to the proper state court, not being properly under the jurisdiction of the United States Circuit Court, whose officers the Receivers are.

The *North American* of recent date says: "The following is the distribution of Reading's shares among the holders of the common stock of the company: Philadelphia, brokers, 52,781; Philadelphia, individuals, 97,041; New York, brokers, 138,824; New York, individuals, 88,804; foreign brokers, 25,900; foreign individuals, 240,050; fractional shares, 68. Total, 656,827. The preferred stock held amounts to \$1,036, and the shares held by Americans reach 389,711. The holding of the McCalmonts is as follows:

	Com.	Prof.
McCalmont Brothers & Co.....	157,288	18,470
Robert McCalmont.....	2,128	1,104
Hugh McCalmont.....	952	1,104
Total.....	160,368	20,678
Total common and preferred.....	181,353	

In Philadelphia last week the United States Circuit Court gave an important decision refusing the application of the Receivers for permission to make a car-trust loan of \$1,000,000 for the purchase of new equipment. Judge Butler said, in giving his decision: "In terms the petition is for the creation of a car-trust, but in effect it is for authority to make a loan as stated. Two questions arise in considering the application—first, is the matter contemplated within the scope of the Court's duty and authority as custodian of the road and other property of the company? Second, if it is, would it be wise to grant the application? As respects the first question, it must be borne in mind that the custody of the Court is only temporary, to preserve the property simply, to continue so long only as may afford reasonable time to the plaintiffs in the foreclosure bill to prosecute their proceeding to a close, in case the company shall fail to make satisfactory arrangements to relieve itself from the proceeding. Whether the order here asked for by the Receivers, or the allowance of it, falls within the proper scope of the Court's authority under the circumstances is certainly open to doubt. I will not, however, enlarge upon this subject; for if it was not so open to doubt, I am satisfied that it would not be wise to make the order. The petitioners admit and the testimony proves that the net earnings of the road are amply sufficient to make the purchase required, and that if necessary these earnings should be so applied. The grounds upon which the petitioners desire to borrow, instead of using such moneys, are that these moneys may be applied to the payment of the bonded creditors of the company in discharge of interest. They esteem it wiser, if necessary, to allow such interests to go unpaid rather than to discharge them by means of borrowing money, which may tend to mislead creditors and others respecting the actual condition of the road and its earnings. It must be borne in mind that the Court's custody of this property is not likely to continue very much longer. The foreclosure proceeding has been running for about 18 months, and it should reach its close without unnecessary delay, and the Court expects it to do so. The interests of all parties involved require that the road and other property shall pass into the custody and management of its owners without prolonged delay. The modern practice prevailing to some extent of transferring such and other corporate property to the custody of the courts, to be thus held and managed for an indefinite period of years to suit the convenience of parties, whereby general creditors are kept at bay, I regard as a mischievous innovation."

In concurring fully with Judge Butler's decision, Judge McKennan said: "To the extent that the earnings of the road are required to keep up the road in stock and equipments and to preserve the property, the Receivers have authority so to apply it; but to borrow money to enable them to continue to pay interest to bondholders I consider unwise. When the Receivers were appointed they became officers of the court, and I supposed that the petition presented was to meet an emergency that had arisen, but which the company

had ample funds to supply. The creation of the trust would tend only to prolong the period of the Court's jurisdiction and defer the time when the property ought to go to those whose property it was."

Philadelphia, Wilmington & Baltimore.—The transfer of the lower end of the old Pennsylvania & Delaware road to this company has been completed. The line transferred is the section from Newark, Del., to Delaware City, which will be worked as a branch of this road hereafter.

Potomac, Fredericksburg & Piedmont.—In the suit of Samuel D. Karns and others to prevent the sale of this road, the United States Circuit Court has decided that it has no jurisdiction in the case and has ordered the discontinuance of all proceedings. The case must be taken to a state court.

Rabun Gap.—This company has been formed by the consolidation of the Knoxville & Augusta, of Tennessee, the Rabun Gap Short Line, of North Carolina, and the Clayton Company, of Georgia, the consolidation having been completed Oct. 18. The new company owns 16 miles of road in operation from Knoxville, Tenn., to Maryville, and is at work on an extension to meet the Northeastern, of Georgia.

Richfield Springs & Cherry Valley.—This company has filed articles of incorporation in New York to build a railroad from Richfield Springs southeast to Cherry Valley, about 16 miles, through a very hilly country.

Richmond & Allegheny.—Track was laid last week on the Lexington Branch from the main line at North River, Va., northward to Lexington, about 10 miles, completing this line.

The formal opening of the road took place Oct. 15, when a train left Richmond with the officers of the road and a number of invited guests, who were taken to Howardsville about 90 miles, where another train from the western end of the road was met, and a third train from Lexington. At this point there was a banquet, followed by speeches and congratulations on the completion of the work. After the completion of the ceremonies the trains returned to their respective starting points.

The *Richmond Dispatch* thus describes the line surveyed for the connection with the Ohio Central: "The surveys are complete and final locations are made for all except 30 miles of the lighter work. The route leaves the Richmond & Allegheny at Eagle Rock, 215 miles from Richmond, and follows the valleys of Craig's and Sinking creeks to New River, 62 miles; thence the valley of New River past Hinton to Gauley, 86 miles; thence the valley of Great Kanawha to Point Pleasant, 106 miles—making a distance from Richmond to the Ohio River of 469 miles. The distance from the Ohio Central to the Ohio River is 49 miles. The line will have a summit level 50 feet lower than the Chesapeake & Ohio, and lower than any line south of the Erie, and from the Ohio River to Richmond the minimum grade east or west will be 30 feet. The line crosses the Pittsburgh coal seam at Raymond City, passes through Charleston and Maiden and all the salt furnaces of Kanawha. It passes the great operated coal mines at Campbell's Creek, Cannellton and Hawk's Nest, and west of Hawk's Nest there is business enough already developed to sustain the road."

Rochester & Pittsburgh.—This company is negotiating for the purchase of the Silver Lake road, which is seven miles long, from Gainesville, N. Y., to Perry, and has a considerable summer business. It will have to be extended about a mile to make connection with this road.

The company has recently bought several new passenger cars and has fitted all its passenger equipment with Westinghouse air brakes. Work has been begun filling up several of the high trestles on the line. Work on the extension from Rochester to Charlotte on Lake Ontario will not be begun before spring.

Securities on the New York Stock Exchange.—The following securities were last week placed on the lists at the New York Stock Exchange:

Boston & New York Air Line, \$1,000,000 common stock. *Chicago & Northwestern*, \$3,030,000 new sinking fund 5 per cent. bonds secured on new extensions.

Houston & Texas Central, \$1,000,000 additional general mortgage bonds.

International & Great Northern, \$300,000 additional first-mortgage bonds and \$300,000 additional second-mortgage 6 per cent. bonds.

Louisville, New Albany & Chicago, \$5,000,000 new consolidated stock, replacing the old stock.

New Orleans Pacific, \$2,639,000 additional first-mortgage bonds.

Panama, certificates of United States Trust Company for stock deposited; 62,000 out of 72,000 shares have been subscribed to the agreement and deposited.

Richmond & Danville, \$4,000,000 stock and \$6,000,000 bonds; now listed for the first time.

Texas & Pacific, \$1,500,000 additional first-mortgage bonds on Rio Grande Division.

Texas & St. Louis, \$608,000 first-mortgage bonds, \$608,000 land-grant income bonds and \$608,000 stock; all additional to amounts previously listed.

Shenandoah, Sidney & Pacific.—This company has filed articles of incorporation to build a railroad from Shenandoah, Ia., on the Wabash, St. Louis & Pacific, westward to Sidney and thence across the Missouri to a connection with the Omaha & Republican Valley Branch of the Union Pacific at or near Valparaiso, Neb., a distance of about 85 miles.

South Mountain.—In the United States Circuit Court in Philadelphia, Oct. 14, a motion to vacate the sale of this often-sold road, which took place about a year ago, was denied. The bondholders, who made the application to vacate, gave notice of an appeal.

Vicksburg, Shreveport & Pacific.—The Shreveport (La.) *Standard* publishes a letter from General Manager John Scott, from which the following is an extract: "Every effort is being made to complete that portion of the road intended to run from Monroe to Shreveport. The funds are all provided, and much exertion is being made to commence on the road as possible. The Ouachita River bridge, which will cost in the neighborhood of \$160,000, will be completed Jan. 1 next, and I hope within a few days to advertise the letting of that section between Monroe and Arcadia, a distance of 47 miles. The survey has been completed to within six or seven miles of the Red River, and that portion of the work is being delayed at present until I can pay a personal visit to the river to decide at which place the bridge will cross. When once started the contracts will be framed in such a way as to have the utmost expedition used. My company is anxious to get the work pushed through with the utmost celerity."

Warrior Coal Fields.—This company has been organized at Gainesville, Ala., to build a railroad from that town northeast up the valleys of the Tusculosa and Black Warrior and thence northward to Decatur, about 150 miles in all. A large part of the road will be through a region rich in coal.